

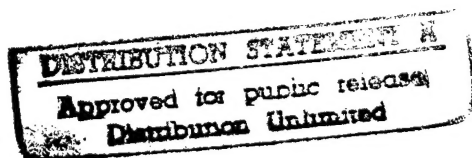
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China Report

AGRICULTURE



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NEED TO INCREASE MATERIAL INPUTS IN AGRICULTURE STRESSED

Beijing NONGYE JISHU JINGJI [ECONOMICS FOR AGRICULTURAL TECHNOLOGY] in Chinese No 3, Mar 86 pp 1-5

[Feature article by Lu Wen [4151 2429], of the Rural Development Research Center of the State Council: "Increased Material Inputs in Agriculture Needed"]

[Text] Over the past few years, we have mobilized mass farmer autonomy and enthusiasm and encouraged rapid growth in farm production primarily through reform of the agricultural system and readjustments in the structure of production. But to limit ourselves merely to these measures will be insufficient. From now on, stress must be placed on increasing material inputs, or it will be difficult to sustain stable farm growth.

Agricultural Production Should Have Specific Material Inputs

There are some who assert that the amount of funds invested into agriculture since liberation has been considerable. Numbers of basic agricultural projects have been undertaken; quantities of modern production materials have increased enormously. But in spite of this, production results are far from ideal and farm products are still insufficient to meet social demand. Investment has fallen in recent years, as has basic construction; and yet farm production is up extensively, with such major farm products as grain, cotton, and oil able to meet social demand. The upshot of this has been to say that primary reliance on policy will solve the problem and there is no need to increase investment. This explanation is not totally unreasonable, and yet it is not correct, either.

Agricultural input was certainly considerable prior to the 3rd Plenum of the 11th CPC Committee; and yet results were disappointing. In the 26 years from 1953 to 1978, there was a 1.25-fold increase in the area of farmland under irrigation, a 5.4-fold increase in total farm machinery horsepower, a greater than 4-fold increase in rural electrical use, and a 112.3-fold increase in chemical fertilizer application. In the same period, however, the GVAO showed a mere 1.3-fold increase. Grain was up only 86 percent, cotton only 66 percent, and oil just 24.4 percent. This was primarily due to a system which was characterized by a high degree of centralization, reliance on administration to handle management, "eating from the big bowl,"

and egalitarianism--all of which dampened the autonomy and enthusiasm of the people. Consequently, the material which went in was not as effective as it could have been.

Over the last several years, the state has reduced its investment in basic agricultural construction while farm production has grown rapidly. Gross rural social output value in 1984 was up around 80 percent on a par value with the figure in 1978--an average increase of 10.3 percent per year. Grain was up 33.6 percent, cotton 180 percent, and oils 127.1 percent. The rate of increase was much faster than in the past. This was primarily due to the fact that reforms in the rural economic system and adjustments in the structure of production mobilized the autonomy and enthusiasm of the mass of farmers and brought about a rational utilization of resources. Furthermore, the basic field construction projects which had been undertaken in the past became more effective. This achievement could not have taken place without the basic construction which had gone before. At the same time, the considerable amount of chemical fertilizer, farm equipment, and electrical power which have been put into use in farming in these last few years must not be overlooked. Figuring from 1978 through 1984, application of chemical fertilizer increased 71.6 percent; total power of farm equipment went up 66.2 percent; and electrical energy usage in rural areas increased 83.4 percent. Without such inputs, the developments of recent years would have been impossible.

Agriculture is a sector of production in which a transformation in material capacity is realized in the interweaving of the process of natural reproduction and that of economic reproduction. A specific amount of input results in a specific amount of output. As S&T becomes applied to agriculture and agricultural production advances, material inputs of a social character steadily increase. The more modernized agriculture becomes, the more the inputs. In the 4 years before the Soviet Revolution, between 1913 and 1917, there was an average of 0.5 Hp of equipment for each farm worker and an input of power of 20 Hp for each 100 hectares of area sown. By 1982, these figures had increased to 28.3 and 320 Hp, respectively. Fixed assets in equipment per farm worker had reached 10,500 roubles. In West Germany, the investment per worker in agricultural sectors increased from 400 marks in 1950 to 3,800 marks in 1977--an 8.5-fold increase. In industrial sectors, the figure went from 1,600 marks to 4,200 marks (in 1976)--up only 1.6-fold. As of 1975, output of 1 mark worth of farm products required as backup 4.6 marks of assets in equipment. Modernized agricultural development in China is not exception, and will require steady increases in material input.

Why the Stress on Increased Material Inputs?

Growth in farm output has been rapid in recent years. The rural scene is changing quickly, and conditions there are good. But attention must be paid to further changes cropping up amid these overall favorable conditions. First of all, field water conservancy has in recent years been relying on past investments. Subsequent to implementation to the output-related household responsibility system, basic construction in field water conservancy projects ceased in most areas. Moreover, many earlier projects were

destroyed and those remaining have gone for years without repairs. Reservoirs have become sedimented and dikes have fallen. Channels have become impossible and mechanical wells have broken down. All this had led to a large decline in returns. Statistics for the Ministry of Water Resources and Electric Power show that between 1981 and 1984, 41.36 million mu of area were added to irrigation throughout the country while 48.67 million mu were dropped. This balances out to a net loss of 7.31 million mu. Net losses were above 1 million mu in the provinces and regions of Anhui, Shaanxi, Nei Monggol, Gansu, Guangxi and Guangdong. Without large-scale measures, the trend toward decreases in irrigated area will continue. Without water, other material inputs will have little likelihood of becoming effective.

Second, while there have been some increases in the amount of fixed assets of a productive nature in rural areas over the past few years, few of these assets are in collectives or in farming. A sample survey of 262 villages around the nation showed that between 1978 and 1984, there was overall a 1.4-fold increase in the amount of fixed production assets, while that part under collective ownership increased 53 percent. Of the latter, industrial, sideline, and transportation equipment and production plants showed a 1.6-fold increase, while investment in draft, breeding, and production livestock, in large and mid-sized wooden farm tools, and in machinery for agriculture, animal husbandry, and fisheries fell 10.7 percent. Ownership of production assets by individual households has increased rapidly in these years, and had reached one-third of all such assets by the end of 1984 and as much as one-half in areas where the collective economy is not well developed. This development exhibits the following features: First, once a household becomes involved in the responsibility system it must quickly become a productive force on its own and go out and purchase draft animals and metal or wooden farm tools. According to the sample survey, domestic animals comprised the largest part of fixed assets owned by 35 percent of farm households, followed by 24.9 percent of households which have use of such animals for production. Second, most of the machinery purchased by farm households is used in industry, sidelines, and transport. Statistics from 123,000 farm equipment stations in 27 provinces show that 61 percent of total tractor activities was for transport. Most investment in materials for production comprised chemical fertilizer and plastic film. A third factor is that specialized and larger farm households have been growing faster than the general farm household. A survey of 480 households in Shaanxi revealed that the average fixed production assets per household in 1984 was 670 yuan, with 13 percent having basically none at all, while the 6.3 percent consisting of specialized households had 30.4 percent of such assets--almost fourfold more than the average. Most of these items were used in developing industry and sidelines. A fourth factor is the fact that the tools now owned by farm households are rudimentary and in short supply. Statistics from a survey of 36,000 households throughout the nation show that for every 100 farm households there only 47 draft animals, 54 animal-drawn plows (harrows and seed plows), 41 rubber-tired large carts and pushcarts, 6 windmills and waterwheels, 3 small tractors, 4 electric motors, 1 diesel engine, 1 agricultural pump, and 1 thresher. This points up the distance from the needs of modernization. Mere reliance on this weak force is highly unlikely to lead to meeting the demands placed on agriculture by development of the social economy.

In a third area, more inputs are needed into readjusting the structure of agricultural production. In the 6 years from 1978 through 1984, there were major shifts in the layout of farm crops. Grain sowing area dropped from 1.81 billion mu to 1.60 billion--a reduction of 7.1 percent. Meanwhile, grain output increased by 205.1 billion jin. Area sown in cash crops went from 216 million mu to 290 million--up 34 percent. Output and output value for these crops increased even more. The proportion of grain crop output value in total output value from planting and sowing fell from 76.7 to 66.2 percent, while the proportion for cash crops rose from 11.9 to 20.6 percent. Proportions for output value of other crops, such as vegetables, went up as well. In the same period, there were major increases in output value for forestry, animal husbandry, sidelines, and fisheries, with the output value ratio for these sectors rising from 23.3 to 31.4 percent. This period saw a rectification of the unduly leftist tendencies of the past which led to a more rational utilization of agricultural resources and a more rational combination of the various elements of production while leading to conspicuous economic returns without need for a large increase in investment. Statistics show that the proportion of rural economic expenditures of various sorts in 1984 to total income fell 5 percent from 1978, while the proportion of net return from them went up from 60.2 to 65.2 percent. Readjustment in those areas where the readjustment work is just beginning, need to be carried out now. But in most areas, what is now needed is intensified and quality growth. As a social requisite, grain needs improvements not just in quantity but in quality as well. With the areas to be sown in grain now holding steady or falling, unit-output increases must be vigorously pushed. Surpluses are already appearing from some cash crops; and improvements should come in quality and in the development of new strains. The production cycle is lengthy in forestry, and investment does not show a rapid return. Production technology for animal husbandry, sidelines, and fisheries are rather complicated; and they require great deal of equipment and ancillary industry. All of these areas need new material inputs. Opportunities in which we might consider relying on the readjustments alone are now few indeed.

Finally, farmers in many places began to show falling enthusiasm for planting their fields, especially for planting commodity grain during 1985. Many farmers did a crude job of planting and then turned to industry and sidelines, ignoring field management. Inputs were also lower than in the past, not only in the conspicuous drop in household fertilizer and green manure usage, but also in the use of chemical fertilizers and pesticides. This increased pressures on supply and sales cooperatives and commercial departments. The amount of farmland lying abandoned is growing daily, and there are many locales which are actually "cultivated in appearance but secretly fallow." The major reason for this drop in enthusiasm is the fact that returns from planting--and particularly from planting commodity grain--fall short of those from other lines of business. Statistics from a survey of 36,000 households nationwide show that the average net income from 1 mu of grain in 1984 was 85 yuan, while that from a mu of cash crops was 172 yuan. The average income per worker was 4.9 yuan in planting, 4.4 yuan in live-stock, 8.4 yuan in farm product processing, 8.6 yuan in commercial food and beverage, and 15 yuan in transport and industrial product manufacturing. In comparison, income from planting grain is the lowest. On top of that,

prices for materials used in farm production have skyrocketed in recent years and the burdens of the fields themselves have increased, so that this problem has become even more conspicuous. When farmers were just becoming involved in the output-related contract responsibility system and had just gotten their first plot of land, they were most concerned with providing for basic needs and were still motivated toward planting grain. Now that most have solved those basic requirements and are looking to become comparatively well off or affluent, they are naturally putting their skills and money into higher income sectors. This budding trend is noteworthy.

The rapid growth of farm production in recent years has relied primarily upon motivation of farmer enthusiasm, increases in inputs in effective input of manpower, and input of manpower in the material form of chemical fertilizer, plastic films, and pesticides. If farmer enthusiasm and inputs fall, it will have an impact on growth of agricultural production, particularly in grains, and weaken the agricultural base. Effective steps must be taken to avert this situation. One basic link would be to increase investment in basic agricultural construction, strengthen farm mechanization, increase effective inputs in other areas, and upgrade the land output rate and labor production rate. To this can be added land adjustments and implementation of an appropriate level and scale of operations, let "industry complement agriculture," reform circulation systems, improve services, stabilize the price of production materials for farm use, and alleviate land burdens, so as to bring average incomes from planting grain up to or above those in other businesses. This should help to bolster the enthusiasm of persons engaged in farming. China's overall national economic growth requires a rather rapid growth of farming. By the end of the century, if the demands of population increase and other factors are to be met, grain output must reach 1 trillion jin--an average annual increase of 10 billion jin per year. Forestry, animal husbandry, and fishing will also require significant increases. This is a tremendous task. We can no longer continue as in the past to rely solely upon policies to motivate farmer enthusiasm and readjustments in the structure of production to provide for rapid increases in output. Stable increases in agriculture will require continual increases in material inputs along with improved policies and heightened farmer enthusiasm.

Where Are Increased Material Inputs To Come From

Increasing material inputs into agriculture has many aspects, the following of which have been most notable in recent years.

Fertilizer application must continue to increase. In recent years there has been a marked drop in input of organic fertilizer. A survey in Henan shows that the area where green manure is applied dropped 20 percent from the previous year. Nightsoil usage was down 34 percent from previously. Much urban nightsoil finds no takers. Because of this drop in organic fertilizer usage, the organic content of soils has dropped to differing extents. Thus, farmers must be urged to increase their input of organic fertilizers such as green manure and nightsoil. Application of chemical fertilizer should continue as well, with increases in areas where it is still not much used. However, application should be geared to soil conditions, and application technology and fertilizer effectiveness should be upgraded.

Basic water conservancy construction should be strengthened. Those projects which have already fallen apart should be repaired as quickly as possible. Old equipment should be refurbished. Projects should be integrated, and the effectiveness of existing projects should be improved. Where conditions permit, new water conservancy projects which expand areas under irrigation should be planned and implemented. At the same time, river projects which aid in flood disaster prevention must be strengthened as well. Moderate and low-yield fields must be transformed, e.g., by controlling salinification, transformation of lengjintian [0397 3190 3944], and soil improvement and leveling. Cooperative organizations and rural administrative agencies in all locations should work on planning water conservancy projects for farmland which, based upon principles of mutual aid and benefit and by enlisting farmer cooperation, lead to the establishment of a system for bringing together the labor necessary to allow for uninterrupted basic field construction.

Basic measures toward commodity production and circulation must be strengthened. Plant and domestic animal and poultry reproduction bases should be established, along with projects for highways, transportation, storage, and communication. Supplies of production materials should be well handled, with service systems for elimination of blight and pests, product processing, warehousing, transport, and sales. Pastures and feed bases should be constructed, along with fishery projects. This should gradually lead to the establishment of relatively concentrated commodity production sites. Special attention should be paid to the seaboard and other favored areas, toward the establishment of a group of new export bases to handle farm products, local specialties, and smaller commodities from township and town enterprises. This will turn agriculture into a moneymaking endeavor. In all, we should move from material guarantees for smooth progress of commodity production and circulation, and toward improvements in the current backward situation in sluggish information transfer and supply and demand difficulties.

We should continue to promote agricultural mechanization. This went rapidly right after institution of the responsibility system, but mostly occurred in industrial and sideline machinery. Most tractors were used for transport. In most areas, the mechanization in all major processes of farm work was even less than before. If even more labor force is to be released to enter secondary and tertiary industries, and if the agricultural labor production rate is to rise while labor burdens themselves fall, there must be more farm machinery so that manual production gradually becomes mechanized production. The fact that much farm machinery has already been misused and depreciated must not be overlooked. This machinery should be replaced with newer equipment and an input of new machinery. Under household management conditions, most farm equipment should be small in scale. The countryside is now engaging in ever more diversified operations, which should have the proper equipment to go along with it. Nevertheless, in most areas, the scale of farm operations is still very small, with one household farming 7 or 8 mu of farmland which is, for the most part, separated into separate plots. It would be extremely uneconomical for each of these households to purchase farm equipment individually; not only would the utilization rate be small, it would also be extravagance in the extreme. Optimally, they should join

together, with a plan for what each household should buy and what each household should manage, with one household paying another for what it uses. There might also be specialized farm machinery households which provide services for a fee.

Input into agricultural S&T and research must increase. Growth in farm production relies more and more on science. Right now, what is needed are new products and equipment, and new production technology and materials which are suited to China's farms. S&T service organizations should be set up and made sound. The work of promoting technology on the agricultural front must be strengthened. Agricultural science research organs must be strengthened and restructured gradually to carry out research in leading-edge areas. Agricultural research workers must be trained. Growth in S&T in the countryside will require developments in education and improvement in rural educational levels, and reform in rural schools to turn rural youths into professionals with special technical knowledge. These projects will require inputs of manpower, funds, and material. Attention must be paid to improving the ecology of the agricultural environment. Trees and grasses should be planted to prevent water and soil erosion, reduce desertification, and prevent water and air pollution. These are tasks which take a long time and show no easy results, and which will require inputs of large amounts of manpower and material. But this is also what will ensure the basic construction necessary for healthy agricultural development, so it should be carried forward with determination.

Funding Sources for Agricultural Construction

Material inputs into agriculture take the form of capital as well as labor. Where are those construction funds to come from? Generally speaking, from the state, collectives, and farm households. Reliance must primarily be upon the countryside.

State investment is primarily in the form of allocations for basic agricultural construction and farming itself through the state budget. Still, given the fact that the state budget must also take into account development of industry and other sectors having a long development period which will consume a great deal of those funds, the amount of funding for agriculture is limited. In order to increase the amount of funding for agricultural construction, a portion of the funds taken in income and industrial and commercial taxes from township finance (or, where no such agency exists, to the county)--also for use in agriculture. At the same time, indirect methods, such as reducing the amount of low-price grain procurement in grain-producing areas, will be tried to reduce farmer outlays and increase their income so that more will go into basic agricultural construction. Taxes will be reduced to lower the selling price of chemical fertilizer, produced by small plants. Subsidies for production materials for farm use will still be implemented to hold prices steady. Agricultural taxes will be held down to reduce burdens on farmers. With what little in state investment there will be, it would be inadvisable to "sprinkle it around" indiscriminately; rather, it should be earmarked for priorities which are rather urgent, profitable, and have fundamental and leverage potential. Uncompensated inputs

should give way to compensated ones as much as possible, or take the form of loans with interest. All major undertakings should be preceded by investigation, planning, and feasibility studies to conserve and upgrade returns.

Funds loaned by banks and credit cooperatives have a major role to play in rural construction. With rural deposits continuing to grow, there are more and more funds for these institutions to loan out. But the large outlay of funds brought about by the glut of farm products has an impact on the growth of farm credit. Readjustments in production and reductions in these gluts must be used to release more funds for loans. Since economic returns from farm production are comparatively low, farm loans should be given certain preferences and be furnished in a reliable fashion.

Funds from rural collectives also have strong role to play in rural construction. Statistics show that in the 4 years 1981 through 1984, collective township and town enterprises throughout the national furnished a total of 5.1 billion yuan, equal to threefold the total investment of state funds for agricultural construction during the same period. Another sample survey of 262 villages nationwide showed that that of the total investment in production per village in 1984, 99 percent of funding came from the villages themselves or from loans. Of that 99 percent, 54.2 percent was provided by inputs from collectives, while 5.6 percent was from new economic collaborations and 40.2 percent from farm households. Growth in the collective economy differs from region to region, and there were great differences from one area to another in the input from collectives. In Jiangxi survey sites, collective inputs were only 0.6 percent while in Hunan they were a mere 0.3 percent. There were no collective inputs at all at survey sites in Yunnan and Qinghai. In regions where the collective economy is fairly well developed, management and use of collected funds was rather good; elsewhere, there were serious disruptions. Much of the fixed assets and material which the collectives withheld was impaired or lost due to bad management. Existing funding was used again and again for subsidies to cadres, unsystematic outlays, paid out either to farmers to make up for various burdens or diverted into corrupt payments. That portion for assigned contracts was paid out at a depressed price. Post-assignment depreciation and withholdings were either not collected or else mismanaged or used irrationally after collection. According to statistics, collectives are now in possession of some 30 billion yuan, while annual payments in depreciation, withholding, and fines is less than 10 billion. This problem should be attended to and cleaned up, and the management and usage system should be made sound. In localities where old accounts still cannot be balanced, new accounts may be attended to first. Many areas in which township and town enterprise is well-developed have implemented a policy of "using industry to supplement agriculture." The central leadership has reviewed and assented to this experience, and it should continue to be conscientiously implemented in areas which have the requisite conditions.

After implementation of the output-related contract responsibility system, there was a marked increase in the amount of investment by farm households in agricultural production relative to total agricultural investment. Improvements in farm living standards should continue to pave the way for

increases in this investment. What actually is the investment potential of farmers at the present time? Based on projections by the State Statistical Bureau, the average outlay per farmer in production-related fixed assets in 1984 was 16.9 yuan. Another survey of 36,000 households nationwide showed an average household income of 3,089 yuan in 1984 and an average household expense for investment in the purchase of production-related assets of 152 yuan (31.6 yuan per capita). Total surplus after all various expenses was 203 yuan (42.3 yuan per capita). This portion may be used to improve the standard of living or to pay various burdens. It may also be used to expand production even further (as was the case for sites where incomes were higher). These figures need concrete analysis. First of all, it is the higher-income and specialized households which have the higher investment in production-related fixed assets, compared with general households. The same survey showed that at the beginning of 1984, households with net incomes of over 500 yuan had double the investment in fixed assets that households with below 200 yuan per capita in net income had, and the rate of increase of fixed assets during the year was more than twice as great. The bulk of investment was in industry and sidelines, compared with agriculture. Second, there were great disparities between surpluses in households of different incomes. Households with incomes below 300 yuan per capita (comprising 47 percent) had outlays exceeding income by 28 yuan. Households between 300 and 500 yuan in income per capita (comprising 27.7 percent) had an average surplus of 33 yuan. Households between 500 and 1,000 yuan in income per capita (comprising 19.8 percent) has an average surplus of 126 yuan and those with over 1,000 yuan in income per capita (comprising 5.5 percent) had an average surplus of 470 yuan per capita. This means that nearly half those surveyed had no surplus, one-fourth had some, and one-fourth had a significant surplus. At the same time, the various expenditures encountered in the countryside have not only eaten up these little surpluses, they have become heavy burdens for the broad mass of farmers. The bulk of net income for most farmers now goes for living expenses--especially food and housing. It is only for households with per capita incomes above 500 yuan that a significant portion of outlay goes into production. Moreover, the focus of investment is industry and sidelines. Thus, we must be accurate in assessing both the investment capacity of the farmer and in guiding farmers toward sound management of the relationship between accumulation and expenditure, and as the basis of living standards gradually improves, stress investment in production--especially agricultural production. Diversified modes which farmers are willing to accept should be adopted, including appropriate growth in loans in the private sector, in order to bring together those funds now scattered among farmers. Nevertheless, by and large, the amount of money the farmers have is not much; and most of it is being used to develop household operations and township and town enterprises. For public construction, infrastructure, key projects, and major industries, investment by the state and collectives will be needed.

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GRAIN PROBLEM VIEWED BY SECRETARIAT OFFICE

Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese
No 1, 23 Jan 86 pp 16-18, 45

[Article by Wu Xiang [0702 6272] and Lu Wenqiang [7120 2429 1730] of the
Research Office of the Secretariat of the CPC Central Committee: "A Look at
Various Aspects of the Grain Problem"]

[Text] In the past few years, grain production in China has continually made large-scale increases and the average amount of grain per capita in China is almost 800 jin, close to the world average. However, the 1985 grain output declined, and the degree of decline was not small. This came as a surprise to some comrades, who worry about whether there have been mistakes in the work dealing with grain; some even wonder whether there is something wrong with recent agricultural reforms. We wish here, for purposes of reference and discussion, to talk a bit about our view of the history, present condition, and policies of the grain problem.

I. The Origin and Importance of the Grain Problem

Everyone knows that the food upon which humans rely for their existence consists primarily of grain or primarily of other foods processed from or converted from grain. As a result, the state of grain production is an extremely important factor in determining the stability of agriculture, this foundation of the national economy. Experience since the founding of the nation has shown that when grain is in good shape, the entire national economy can develop smoothly; when grain is in poor shape, economic growth is affected, and can even begin to shrink.

Grain shortages in China have historically been a problem. Since the founding of the nation, this problem has always prominently confronted our party and government. One of the basic causes leading to the grain problem is China's vast population and the relatively small area of farmland.

Even though there have been increases in China's grain output during these several decades, it still cannot meet the growth in demand. From 1957 to 1977, total grain output only grew 46.7 percent, but the total population grew 50.4 percent, such that the amount of grain per person decreased 16 jin. The purchase of commodity grain increased 32 percent from 1953 to 1980, but the sale of commodity grain for the same period increased 106 percent.

In order to better the tight domestic grain supply, we have imported grain from overseas. Starting in the 1960's, China had always had a shortfall between supply and demand of domestic commodity grain, except for the 5 years of 1966, 1967, 1968, 1970, and 1974. From 1960 till 1980, there was 1 year with net grain imports above 20 billion jin, 3 years between 10 and 20 billion jin, and 15 years with less than 10 billion jin. Within this period, there were 8 years when there were both imports and use of reserves. We can say that the grain problem has always been a major problem afflicting China's people.

The only way to change the grain shortage's hold upon China is to rely upon improved labor productivity and increased grain yields per unit of area. But under the influence of "leftist" ideology, the growth in grain output was extremely slow. In the 28 years from 1949 to 1977, the per-mu output of grain hovered at within 200 jin for 14 years and between 200 to 300 jin for 8 years. The total grain output in 1958 was 400 billion jin. It took 14 years just to get up to 500 billion jin, and by 1978 it had just reached 600 billion jin. Furthermore, part of the increased yield was obtained by opening up barren land, grasslands and forests, and reclaiming farmland from lakes and the sea. The result was that grain output did not increase much, but natural resources and the ecological environment met with serious destruction, causing an endless increase in natural disasters.

II. Fundamental Changes in the Grain Production Situation

Since the conclusion of the 10 years of chaos, China's economy has faced a multitude of difficulties, and in agriculture it has been even more difficult to overcome the accumulated problems. The situation in agriculture already seriously influences the revival and growth of the entire national economy. At the 3rd Plenum of the 11th CPC Central Committee, convened in 1978, the Central Committee made the agriculture question a major topic of discussion and formulated decisions concerning several problems in strengthening the development of agriculture. It decided to adopt a series of urgent measures to enable agricultural production to be revived and developed as soon as possible. The measures included: reduction in procurement quotas, development of diversified production, large increases in the procurement price for grain and other agricultural products, as well as the intention to import some grain, so that peasants have the chance to rest and recuperate.

Since the beginning of 1979, we have carried out major reforms of the rural economic system. After about 5 years, the various forms of the output-related contract responsibility system implemented throughout the nation and the series of new economic policies have stimulated the production initiative of vast numbers of peasants and have effectively promoted the growth of agricultural production. Total grain output in 1979 was 664.2 billion jin, 55.7 billion jin more than in 1978; in 1982 it surpassed 700 billion jin, and in 1984 it went even higher, to 814.6 billion jin, almost 800 jin of grain per capita, thus fundamentally changing China's long-term inability to deal with the grain shortage and fundamentally meeting the basic needs of 1 billion people. Since 1985, the centralized purchase of grain has been changed to fixed contract purchases and market purchases. This is a major change in China's grain policy, signifying a fundamental change for the better in grain production. At the same time, it also makes possible the further growth of the rural commodity economy.

The principal cause of the fundamental change for the better in China's grain production is the implementation of the output-related contract responsibility system, which has stimulated the production initiative of hundreds of millions of peasants. This not merely shows in the large increases in grain output; it also signifies that we have found a pathway which suits China's conditions and develops socialist agriculture.

Although we currently have a bit more grain, we are still a considerable distance away from satisfying the people's everyday needs at a somewhat higher standard of living. The Chinese Academy of Agricultural Science and the Public Health Research Institute of the Chinese Academy of Medical Science have designed a diet for the Chinese people; according to this diet each person would have an average daily intake of 2,400 calories, 72 grams of protein and 73 grams of fat, with grains accounting for 55 percent of the total calories, and animal foods accounting for 23 percent of the total calories. To meet this demand, in the future China's output of dairy products must increase more than 10-fold; the output of eggs, melon, and fruit must increase severalfold; the output of meat, edible vegetable oil, and edible sugar must more than double; and there must be fairly large increases in aquatic production. Grain should be converted into meat, eggs, poultry, and dairy products; on the average every person must have more than 300 jin of grain every year in order to meet the production of these products. If the demand for meat, eggs, poultry, and dairy products further increases, there will be an increased need for feed grain. Therefore, our grain supply is not really ample; especially in a few inaccessible and poor mountain areas, there are still considerable numbers of people whose basic needs have not been entirely met. Therefore, we must still continue to strive to promote further increases in grain production.

III. How Should We Regard the 1985 Decline in Grain Output

In 1985, the total grain output in China declined by a fairly large degree. This was primarily due to the following factors:

A. In restructuring agricultural production, the area sowed in grain was reduced. In the past few years, every year the area sowed in grain has declined by an average of more than 10 million mu in order to restructure agricultural production and develop diversified production. Due to overall growth production, in 1985 various localities further adjusted the crop mix and reduced the area sown in grain by about 60 million mu; using the 1984 per-mu yield of 480 jin, this alone would lead to a reduction in grain of 28.8 billion jin.

B. Natural disasters were quite severe. We must recognize that China's agricultural foundation is still weak, and its ability to resist large natural disasters is still very poor. In the first half of 1985, the weather conditions were fairly normal: spring drought and hail were less of a problem than in previous years and summer grains basically had not suffered from dry, hot winds; but starting in late spring, there were low temperatures and cloudy and rainy weather in both the north and the south, and there was severe harm from rust, red rot, and rice blast. In particular, after June, there was drought over large areas of the south, with more than 200 million mu afflicted by the heat

and drought, where the high temperatures caused the first rice crop to mature and affected the sowing of the late rice crop; in the north, the provinces of Liaoning, Jilin, and Heilongjiang and portions of Shandong, Jiangsu, Zhejiang, and Shanghai experienced a series of rain storms, causing more than 85 million mu to be flooded or waterlogged, including more than 66 million mu in the three provinces of the northeast, where the affect on the grain harvest was quite large.

C. Growing grain is not economical, and this affects the peasants' initiative for growing grain. At present, the peasants' overall production initiative is very high; however, because the grain prices are clearly somewhat lower compared to the prices of other products, in some economically developed areas, some peasants with connections have begun to neglect grain production, putting their energy into other areas of production. In addition, there are two more factors which have had a negative influence on the peasants' initiative for growing grain. One is that production materials sold to peasants have generally gone up in price. The second is that there are many kinds of requisitions, and they are very unreasonable. Even more worthy of our attention is that the leaders of some areas give insufficient importance to grain production and do not stress it very much.

From the above we can see that the 1985 decline in total grain production was primarily the result of restructuring agricultural production and of natural disasters. We believe that the 1985 decline in total grain production is fluctuation on a level at which basic needs are fundamentally being met, and is different from the several large rises and falls in total grain production in the more than 20 years before 1978. Those fluctuations occurred when China's grain production had been stagnating for a long time; they were major fluctuations at a low level. Because of this, the consequences of those drops in grain output were very serious. But the 1985 drop in grain production occurred amid continued, large-scale growth in China's grain supply, and was caused by our intentional adjustment of grain production and some other reasons. Therefore, it is a temporary annual drop occurring amid a trend of total growth in China's grain output. As long as it gets proper attention and we adopt the necessary measures to do the job well, we feel that the trend of total growth in China's grain output will continue. At the same time, we should also recognize that although grain output declined in 1985, the entire agricultural front showed signs of continued growth; there were no particular causes for concern.

IV. Policy

In the Seventh 5-Year Plan, due to increases in the level of popular consumption, there will be fairly large increases in the demand for grain and products converted from grain. By 1990, China's total grain output must reach 900 billion jin, an increase of 100 billion jin over the present. In order to achieve this goal, we should still continue to perfect and develop the output-related contract responsibility system according to local conditions; gradually reform the grain circulation system and price system; develop various institutions serving agricultural production; establish various forms of associations;

gradually form a system of labor division which focuses more on society and is more specialized; we should use new science and technology, improve production conditions, and strive to improve agricultural labor productivity.

Based on several current grain production problems which require prompt resolution, we believe that we can adopt the following policies:

A. Stimulate the Initiative of Leaders at Every Level To Develop Grain Production

Although the peasants' "big pot of rice" has been broken, the "big pot of rice" still exists between various areas. This is primarily seen in grain-producing areas producing much grain; there is no gain in sending out grain, and areas lacking grain face no particular economic pressure when they bring in large amounts of grain from elsewhere, in fact, some areas can depend on outside grain bought at the parity price to develop fully other production, thus gaining better economic results. As a result, both grain-producing areas and areas lacking grain neglect grain production. If we do not break the "big pot of rice" between various areas, it will be very difficult to stimulate local initiative for producing grain.

Taking in consideration the current impossibility of using rather large sums of money from the national treasury to adjust the income discrepancies in grain production of every locality, we can take the following measures: 1) the central government will hold each locality solely responsible for purchases, sales, and allocations, connecting grain and money; the financial expenses of increased incoming transfers above the contracted amount will be borne by the locality; the money saved by reducing incoming transfers is to be kept by the locality and used in developing grain production. 2) Increased allotments of grain above the contracted amount are to be traded on the market. In addition, we should gradually establish channels for regulating surpluses and shortages which achieve regional balance and relative stability. The price of imported grain is to be negotiated by the buyer and seller, and the financial expenses are to be borne by the locality. 3) Make appropriate increases in the allotment price, so that, in addition to the purchase price and the commodity circulation management fee, an appropriate profit can be made on grain sent out of a province, thus encouraging more exports of grain. 4) Carry out varying levels of administration: grain departments in the central government should primarily take care of allotments within the plan, imports and exports, national reserves, etc.; provinces should primarily take care of local purchases, sales, allotments, reserves, imports and exports, provincial reserves, etc.

B. Protect the Peasants' Enthusiasm for Growing Grain

At present, peasants have an overall high level of enthusiasm for production, but their enthusiasm for growing commodity grain has been subject to several influences. Since we cannot fundamentally solve this problem in the short run, we can take the following measures:

1. Restore and perfect the method of "assisting and subsidizing agriculture," fully use the effect of microeconomic regulation, and strive to achieve subsidized grain production within the rural economy. In particular, economically developed areas should make full use of township and town enterprises. In technical transformation, let "industry equip agriculture," and in allocations, let "industry subsidize agriculture" in order to balance the relationships between growing grain and growing cash crops and between working in agriculture and working in industry and commerce.

2. Perfect the method of fixed purchases according to contract. In order to demonstrate the mutual benefit and profit for both sides in fixed-purchase contracts and stimulate the peasants' enthusiasm for accepting the responsibility of fixed purchases, the fixed-purchase contract system can be perfected in three respects: first, the fixed purchase of grain should be tied to the fixed sale of parity price fertilizer and fuel; second, restore and continue the system of paying for grain in advance, so that peasants have the working funds with which to buy chemical fertilizer and other production materials; third, increase the limits within which provinces have the right to regulate the kinds of grain in fixed-purchase contracts. Except for the four main kinds stipulated by the central government, provinces may have the right to make appropriate adjustments based on the actual conditions of production and sales; each province can, for the grain in its own province, make appropriate adjustments in the purchase price for different areas and different kinds of grain, as long as it does not surpass the general level of the "inverse 3:7" price ratio.

3. Gradually adjust grain prices and the prices of production materials connected with agriculture.

C. Increase inputs into agriculture, strengthen capital construction in agriculture: In the past few years, China's increased grain output has primarily depended on stimulating the peasants' production initiative; the input of funds into agriculture really has not been that great. From 1952 to 1980, the average investment in agricultural capital construction accounted for 11.9 percent of the total national investment in capital construction, but in the Sixth 5-Year Plan, this percentage dropped to 6.1 percent; as a result, during the Seventh 5-Year Plan, we must increase the investment in agricultural capital construction, in order to ensure the steady growth of grain production.

Strengthening capital construction in agriculture should primarily be approached in the following ways: 1) strengthen establishment of projects in water conservancy, forestry, and industry serving agriculture and of service systems, such as agricultural technical extension, propagation of improved breeds, and prevention of disease and insects, further equipping agriculture in every respect, improving the level of production and stabilizing production. 2) We should establish a number of high-quality agricultural commodity production bases in which scientific research, processing, food preservation, and packaging are conducted in sequence production, to meet the people's every-increasing demand for grain and nonstaple foods. 3) Increase investment in intellectual resources. If we want our primary path to be one of intensive development in which we raise per-unit yields, improve quality, raise the slaughter rate,

the productivity rate, and lower production costs, we must be willing to provide the funds for investment and develop the intellectual ability of rural adults. At the same time, we should increase S & T reserves and train personnel, making ourselves better prepared for future development.

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EXPLOITATION, USE OF WATER RESOURCES EXAMINED

Dalian ZIRAN ZIYUAN [NATURAL RESOURCES] in Chinese No 1, Mar 86 pp 11-16

[Article by Ren Guangzhao [0117 0342 3564] of Water Resources Office, Ministry of Water Conservation and Electric Power; Yang Jifu [2799 4949 1318] of Design and Planning Institute on Water Conservation and Hydroelectricity; and Huang Yongji [7806 3057 1015] of Nanjing Institute of Hydrology and Water Resources, Ministry of Water Conservation and Electric Power]

[Abstract] China's average annual water resources amount to 2.8 trillion cubic meters, while a total reservoir capacity of 440 billion cubic meters, 46.6 million hectares of irrigated farm land, and 20.98 million kW of hydroelectric power are operated on this resource base. From a total water consumption of 477 billion cubic meters, agriculture uses up 88 percent, while industries and urban households account for the remainder. These moderate water resources are, however, hampered by restraints of uneven distribution: shortages in the north, with surpluses in the south. North of the Chang Jiang valley, 65 percent of the nation's farm fields has only 17 percent of the runoff; thus moving of water northward long distances requires vast, expensive projects. Often, huge undertakings like the Chang Jiang Three Gorge high dam may wreak havoc on the environment through silting, population moving, navigation barriers, and fishery. The outcome is in doubt, the project time is long, and costs are high; there is no easy way out for a big, poor country. Still, the article proposes the following countermeasures: ensuring an adequate water supply to major cities by channeling water from nearby rivers, enlargement of irrigated farm areas and building key reservoirs, promulgating water resource laws and regulations, active water saving and resource protection, and enhancement of scientific research.

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NATIONAL

IRRIGATION WORK INCREASES NATIONAL FOOD OUTPUT

OW260310 Beijing XINHUA in English 0053 GMT 26 Jun 86

[Text] Manila, 25 July (XINHUA)--The Chinese government, during the reform of management of irrigation works in recent years, has provided bank loans, instead of state allocation of funds to finance construction of irrigation works and encouraged the peasants to raise funds to construct and operate small irrigation facilities.

This was noted by Chinese senior engineer Ye Yongyi here today at the Asian Development Bank's seminar on irrigation service fees. He said that at the same time China has begun to borrow loans from the World Bank and other international financial institutions to help accelerate water conservancy construction.

He said that successful irrigation works construction in China has greatly helped increase the per-hectare output of food crops as well as cotton and other cash crops. The irrigated land, which accounts for 49 percent of the total cultivated acreage, produces more than 75 percent of the national food output.

He said that the Chinese government has invested a total of 60 billion yuan (about 18.6 billion U.S. dollars) in building irrigation projects and the irrigated land reached about 48 million hectares, four times the figure of 1949 when new China was founded.

Partly due to the achievements in water conservancy, he pointed out, China has basically solved the problem of feeding and clothing its more than one billion people and even has some surplus grain and cotton for export.

The five-day seminar concluded today. Some 30 policymakers and planners from 14 regional countries attended it. They discussed the levy and collection of irrigation service fees and other financing mechanisms.

/12858

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SUPPORT URGED FOR 'SPARK PLAN' TO IMPLEMENT S&T

Beijing NONGMIN RIBAO in Chinese 21 Jan 86 p 1

[Article by staff reporter Chen Daian [7115 0108 1344]: "We Must Give Support to the "Spark Plan" in Science and Technology"]

[Text] The "Spark Plan" approved by the State Council for implementing the spread of science and technology in the countryside has presented a blueprint for reinvigorating the economy of the countryside by applying science and technology. This plan determines the 14 fields in which our technological development is to take place in 1986 and 1987. It will play a great role in strengthening technological transformation in the countryside, in arming our rural enterprises with science and technology, and in changing the outlook of our backward areas by applying science and technology. However, there is still a process from the proposing of this plan to the organization of our implementation and to the achieving of results, and in this process we are yet to encounter many complicated problems. This "Spark Plan" is like scattered stars; if we are going to let them acquire the momentum of a prairie fire, we must "add oil to these sparks." How are we going to add this "oil"? This reporter has recently gathered news from some authoritative figures and policymaking organs; now let me sum up the views of the various circles as follows:

I. Make clear our direction and improve our perception. The key to implementing our "Spark Plan" lies in seriously studying the important directives of our central leading comrades on this plan, and especially understand that "It will not do if we wish to transform the structure of our agriculture without developing our rural enterprises. There will be no future if we develop our rural enterprises without relying on science and technology. With the two combined, we shall be able to blaze a new path suited to China's own national conditions." These three sentences serve to propagate the meaning of the implementation of this "Spark Plan" and enable concerned cadres and masses of the peasants to understand that such implementation is definitely not meant just to fulfill a few projects, still less just to work on capital construction and put up a few stalls, but to propel the development of our rural enterprises, accelerate the readjustment of the structure of our countryside industries, and promote the reform of our urban and rural economic structures by relying on technological advancement.

II. Strictly select our projects. The implementation of our "Spark Plan" is a new task; we should first set up some experimental points and launch it gradually. In determining our projects we must abide by the following principles: One is that products listed in the "Spark Plan" must be predicated on reliable market demands with a definite volume. The second is we must, with technological exploitation as our core and our existing scientific and technological achievements as our foundation, give priority to domestic transfer of technology and, when necessary, import some key technologies or equipment externally. In the case of projects requiring the use of foreign exchange, we should strive to improve our foreign exchange creation capability and succeed at least in replacing part of the products scheduled for importation. The third is that there must be some exemplary significance. Starting from one point, we must train a batch of personnel and spur on the technological advancement of a large tract of enterprises. The fourth is that we must see to it that our investment shall be limited, our effects shall be fast, and our results shall be great. The selection of technologies must adapt to the levels of our rural and medium and small enterprises; we must pay attention to synchronized exploitation and the searching of breaches for breakthrough, we must strive to realize modernization as soon as possible and recover our investment within 3 to 5 years. The fifth is the organization of inter-departmental, inter-regional technological exploitation and service-contracting unions by promoting projects and products as our core so as to attain first of all economic results in the most efficient places as soon as possible and thereby disperse and spread rapidly. The sixth is that the points we select should be as close to production bases of our supplies as possible. Meanwhile, we must encourage our central and local research units or colleges and universities to serve as the rear for our technological exploitation, to actively transfer their scientific and technological achievements, provide analyses, experiments, and technical services of the like as well as consultation, or to use their technologies as investment to pursue joint exploitation with localities or enterprises.

III. Strengthen our planning and project management. When we formulate and implement our plans, we should make uniform arrangements for self-exploitation of technologies, importation of technologies, digestion and absorption, expansion and application, etc. The State Science and Technology Commission, will according to different conditions, meet with scientific and technological departments of concerned ministries and commissions to discuss and determine projects of their plans and steps for their implementation. Part of such projects of their plans may carry out joint investment with the departments in charge and practice graded management of the projects of their plans. The State Science and Technology Commission shall meet with concerned departments to provide guidance to the plans, comprehensive balance, funding control, project inspection and acceptance. As for the preliminary selection of these projects, the organization of their implementation, the appraisal and promotion of their achievements and the use, control and repayment of funds, they shall be mainly entrusted to the provinces, autonomous regions and municipalities for shouldering the attendant responsibilities.

IV. Do a good job in the deliberation and verification of feasibility. In order to provide decisionmaking for the projects with a reliable basis, every

project must have its feasibility deliberated and verified. This includes analyses and forecasts of market requirements, strong points of local resources and economic results, technical power of one's own unit or locality and external conditions of cooperation, domestic and external technical levels, technical keys and measures to be adopted. time scale and prospects of promotion for the formation of products, sources of supplies, scales for yearly investment and plans for repayment, etc.

V. Adopt a reasonable approach to fund raising and strengthen the management of our funds. The funds required by the implementation of our "Spark Plan" shall adopt the form of matched investment. In the case of projects belonging to the national "Spark Plan," their investment shall consist mainly of parts of funds raised respectively by the concerned localities and enterprises; the central financial departments shall provide limited amounts of funds for science and technology, plus loans, as a support; except training costs, all the rest shall be repaid within pre-set time limits. In the case of old, new, remote and poor areas, appropriate preferential treatment shall be granted.

We believe that so long as we "add oil to the sparks" by correct principles and policies, ways and means, then these scattered "sparks" are bound to develop rapidly into the momentum of a prairie fire, and the reinvigoration of our countryside economy can also be expected with certainty.

9255

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SOIL SCIENCE RESEARCH KEYING INCREASED PRODUCTION

Shenyang TURANG TONGBAO [JOURNAL OF SOIL SCIENCES] in Chinese No 1, 6 Feb
86 pp 48-49

[Article by the Chinese Soil Studies Association: "Recommendations for
'Rational Exploitation, Protection, and Management of Soil Resources'"]

[Text] I. Forms and Responsibilities

China's agricultural production at present is in the midst of a shift, moving from simple grain production to comprehensive expansion of forest, animal husbandry, sideline, and aquatic industries at the same time that grain production continues to increase. This shift not only requires that attention be focused on continually increasing production on existing land, it also means that there should be comprehensive and rational development of 9.6 million square km of land with thousands of varieties of soils. This would help further realize their potential and would permit production of even more products, meeting the living and production needs of a population of 1 billion. Aside from grain, cotton, edible oils, meat, poultry, eggs, and milk, consideration should also be given to fibers, silk, tea, dried and fresh fruits, and wood materials. All of these primary products must be extracted from the soil.

Over the past 30-plus years since the founding of the PRC, many soil scientists (some working with scientists in other disciplines) have conducted surveys and studies, doing analytical chemical tests and experiments on various kinds of soils. They have worked on improving soils and rationally applying fertilizers and irrigation. This has played an important role in the steady increase in grain production. They have been the main force behind work on improving saline-alkali soil, water and soil conservation, prevention of desertification, and other projects. They have done important work in regional administration and in guiding production structures, such as in the multipurpose use of the Huang He and Huai He plains, the Huang Tu plain, the San Jiang plain, red soil, and other mountains. They have studied rubber trees for forests, doing studies of seed, fertilizer, vacant land, and land reclamation. In the course of conducting regional soil surveys and comprehensive surveys, they have accumulated systematic data and have produced visible results. They have carried out a nationwide soil survey. Applications of the survey

results have played important roles. Simply by compiling the county data from the soil survey, the total cultivated area in China was determined to be 2.04 billion mu. If the multiple-crop index is included, China's area under cultivation is no less than America's. The work described above has helped train thousands of S&T personnel specializing in soils and fertilizers.

Since the 3d Plenum of the 11th CPC Congress, China's agricultural production has been briskly expanding. Administrative work in the key administrative regions continues apace. Soil management has already entered the stages of planning and pilot experimentation. Work has gone well, however a few tendencies have appeared that cannot be overlooked. For example, some are unwilling to engage in agriculture, overlooking the need to increase grain production. The area planted in green manure has decreased, while supplies of chemical fertilizers were overstocked in 1985 and supplies of organic fertilizers were insufficient. If this continues, soil fertility will drop, and it could lead to exhaustion of the soil. This deserves attention.

What particularly deserves attention is that the area of China's soil erosion always was quite large. With no reduction yet in the silting of the Huang He, and with the Chang Jiang and other river systems also turbid, many mountaintops are now completely bald, and forests and grass have decreased proportionately. In areas with high wind erosion, winds have created sand drifts, and soil fertility is very low. Therefore, the main reason that it is difficult to feed and provide for a population of 85 million [as printed] people is the drop in soil fertility. This all shows the pressing importance of promoting work concerning soils and fertilizers. All appropriate quarters should accord attention.

II. Research Projects

Research projects concerning the rational development and utilization of China's soil resources, their protection, renewal, and comprehensive management are as follows:

1. Land Administration, Problems in Regional Management of Soils

Land administration and regional management is inseparable from soil work. For example, systematic and centrally arranged studies should be made of achieving the proper balance of soils, fertilizer, and water, and of developing agriculture that needs less water and fertilizer; of arranging and distributing the planting of various crops according to local conditions; of the rational utilization of hill soils; of soil conservation and the comprehensive prevention of erosion from wind and water; and of the comprehensive control of soil salinization.

2. Suggestions for Ecological Agriculture and Improved Environment

During the course of shifting from simple grain production to multiline operations, emphasis must be placed on establishing ecological agriculture.

Not only must different kinds of soils be made to maintain an ecologically sound environment, they must also return large economic benefits. Where the environment has been degraded, the situation should be quickly reversed.

3. Improvement of Soil Fertility and Low-yield Soil

The growth and increased production of crops, grazing grasses, and fruit trees is directly related to soil improvement and fertilization. Continuous improvement of the soil and fertility is the basis for continued increases in production. One-half of China's cultivated land at present is low-yield soil. Large expanses of vacant lands and hills await rational utilization. All must undergo large-scale soil improvement and fertilization.

4. Land Use

China has very different climatic zones. On different kinds of soil, many kinds of local, special, famous, and high-quality produce can be grown. In the future, there should be major effort put into land-use studies to enable those products that have declined in production or have approached extinction to rebound and begin increasing.

5. Rational Fertilizer Application

China's traditional practice of using organic fertilizers should be continued. Organic and inorganic fertilizers should be used together for rational fertilizing. At the same time, there should be research into expanded use and proper proportions of nitrogenous, phosphate, potash, and trace-element fertilizers. Guidelines and models of fertilizer-saving practices and optimum proportions should be provided.

6. Soil Classification

Steps taken to increase agricultural production all must stem from the many different kinds of soils. National resources should be marshaled to undertake a systematic survey of China's soils, establishing standards for classifying all soils used in production.

7. Soil Information System and Establishment of a Soil Data Bank

In order to expand the uses of soil data, a soil data bank must be established. It should store and analyze soil data and maps, as well as expand the remote sensing of soils.

8. Special Physical, Chemical, and Biological Characteristics of Soils; Improved Soil Surveys and Experiments To Predict Soil Changes

Soils are a natural resource that humankind always uses and which can change. During their use in production, soils can improve or deteriorate. Therefore, there must be centrally organized observation at predetermined places so that advance reports on changes in the soil and in fertility and water can be prepared.

The expansion of production has forced the soil sciences and related sciences to address the expanded production and new conditions. With central organization, poor-quality and redundant efforts can be avoided and an appropriate division of labor within the field of soil science can be implemented. There can also be expanded cooperation with agricultural, forestry, animal husbandry, biological, and geological sciences. To build ecological agricultural and beneficial cycles, the practical role of soil science must be further exploited.

III. Suggestions

Based on the circumstances described above, there is a special need to expand work concerning China's soils and fertilizers. In June 1985, when the National Soil Studies Association Council was called together by Urumqi City for a scholarly conference, the experts, professors, and other professionals all paid much attention to this. Everyone agreed to ask that the research projects in the "rational exploitation, protection, renewal, and comprehensive management of China's soil resources" program be included among the key scientific research projects of the Seventh 5-Year Plan. This would help mobilize soil researchers to work together in making contributions to the four modernizations.

12994/9190
CSO: 4007/413

GONGREN RIBAO ON CALL FOR GRASSLAND PROTECTION

OW230118 Beijing XINHUA in English 0046 GMT 23 Jul 86

/Text/ Beijing, 23 Jul (XINHUA)--Some of China's leading animal husbandry experts have appealed for "intensified research and management" to protect grasslands and boost livestock breeding.

Experts and officials attending a national meeting on pastures held earlier this month also called for spreading techniques and research results among herders, today's WORKERS' DAILY reported.

"To do this," they said, "we should build up a big and competent contingent of scientists and technicians and train as many herders as possible."

At present, there is only one researcher for every 400,000 hectares of grasslands. "This is far from enough," one expert told the meeting called by the Ministry of Agriculture, Animal Husbandry and Fisheries.

More than 100 million cattle, horses, sheep and camels are now being bred on grasslands, which cover 40 percent of China's land mass. Herders supply the state with 300,000 draught animals, 10 million mutton sheep, 1 million beef cattle and 10 million pieces of hide a year.

Pasturelands serve as a principal supplier of foodstuffs, woolen textiles, carpets and leathers for both domestic and foreign markets.

"However, vast expanses of grasslands have been destroyed or deteriorated because of indiscriminate land reclamation for higher grain output and excessive grazing in the past," participants said.

For example, about one-third of the 220 million hectares of utilizable grasslands in northern China are becoming sandy.

More than 1.7 million head of livestock died of starvation as a snow storm hit Qinghai province, one of China's five major pastoral areas, last winter.

"Forage grass output of pasturelands has dropped nearly 50 percent over the past 20 years," an official of the Ministry of Agriculture, Animal Husbandry and Fisheries told the meeting.

As a result, insufficient storage of forage grass for winter and spring will cause large numbers of livestock to starve to death when natural disasters strike, he added.

PLANTING COMPOSITION READJUSTED THROUGHOUT NATION

Zhengzhou ZHONGGUO CHENGXIANG XINXIBAO in Chinese 15 Jun 86 p 5

[Excerpts] This year, throughout the nation the planting composition has been readjusted. The total area sown to farm crops is 2,178,882,000 mu, an increase of 1.14 percent over last year. The area sown to grain is 1,655,256,000 mu, an increase of 1.38 percent over last year. The area sown to cash crops is 348,711,000 mu, an increase of 1.6 percent over last year.

The area sown to ramie is 3,7[?]7,000 mu, an increase of more than 100 percent over last year. Hubei Province has had the largest increase; its area is 1,200,000 mu, an increase of 810,000 mu over last year.

The area sown to watermelon is 8,345,000 mu (15 producing provinces), an increase of one-third over last year.

The area sown to peanuts is 54,852,000 mu (statistics of 21 provinces, municipalities, and regions), an increase of 10.6 percent over last year.

The area sown to cotton is 72,405,000 mu (statistics of 17 provinces, municipalities, and regions), a decrease of 5.8 percent over last year.

The area sown to flue-cured tobacco is 15,185,000 mu (based on statistics of 17 flue-cured tobacco producing provinces and regions), a decrease of 18.5 percent over last year.

The area sown to ambari hemp and jute has been reduced from 14,750,000 mu last year to 7,878,000 mu, a 53.5 percent decrease.

The area sown to sugarcane is 14,014,000 mu (statistics of 12 sugarcane-producing provinces), a decrease of 370,000 mu over last year. The area sown in Guangdong, a major sugarcane producer, has been reduced from 6,407,000 mu last year to 6,050,000 mu.

CSO: 4007/486

AGRICULTURAL PRODUCT PRICES STABILIZED

Beijing JINGJI RIBAO in Chinese 27 Jan 86 p 3

[Report by Xin Xi [6580 5045]: "After the Nationwide Liberalization of the Agricultural and Sideline Product Market, Prices of the Majority of Products Have Stabilized"]

[Text] This reporter has learned from informed circles that an analysis of statistical data on prices at urban and rural market fairs from January to November of 1985 shows that after markets for agricultural and sideline products were decontrolled nationwide prices for the majority of the products become stabilized. This was the situation:

Market prices for grain and oil became stabilized. Neither natural disasters nor grain shortages were the reasons behind the large fluctuations in the prices of grain. The average monthly variation in the price of rice was from 0.30-0.31 yuan. Average prices were highest in November at 0.33 yuan. This was 10 percent higher than the average lowest monthly price. The average monthly variation in the price of wheat was from 0.21 yuan to 0.24 yuan. The price was highest in March at 0.35 yuan. This price was 19 percent higher than the lowest average monthly price. The average monthly price of corn fluctuated from 0.15-0.18 yuan. It was highest in November at 0.24 yuan. This was 60 percent higher than the average lowest monthly price. The average monthly price for raw shelled peanuts fluctuated from 1 yuan to 1.04 yuan. It was highest in September at 1.06 yuan, 6 percent higher than the lowest average monthly price.

Prices of pork, beef, and lamb rose steadily. Fluctuations in the average monthly price of pork can be divided into two periods. From January to August the price fluctuated between 1.43 yuan and 1.55 yuan while from September to November it fluctuated between 1.5 yuan to 1.63 yuan. There was a 13.9 percent difference between the highest average monthly price and the lowest average monthly price. The average monthly prices of beef also fluctuated between two periods. Between January and April, the price fluctuated from 1.64 yuan to 1.74 yuan, then from 1.86 yuan to 1.91 yuan between May and November. The highest average monthly price was 22 percent higher than the lowest average monthly price. Fluctuations in the average monthly price of lamb was maintained between 1.75 yuan and 1.92 yuan. The highest average monthly price was 24.8 percent higher than the lowest average monthly price.

Seasonal change in the price of eggs was considerable. From March to July, the average monthly price of eggs ranged from 1.22 yuan to 1.35 yuan while the average price of other months was higher than 1.5 yuan. The average price was highest in November at 1.77 yuan, a 45.1 percent rise above the lowest average monthly price.

Prices for live chickens were stable. Fluctuation in the average monthly price of live hens was from 1.6 yuan to 1.78 yuan, but the margin of increase during Chinese New Year was considerable because the average price for February was 1.99 yuan, 24.4 percent higher than the lowest average monthly price. Variation in the average monthly prices of live roosters was from 1.52 yuan to 1.67 yuan. The average price during February was the highest, at 1.88 yuan, a 23.7 percent rise above the lowest average monthly price.

Fish prices have registered a rather large margin of increase. When the average price for April is compared to that for January, the price of carp increased by 18.7 percent, and that of silver carp by 21.2 percent. After April, the price of fish exhibited a tendency to decrease in the face of stability. The average price in April is compared to the lowest average price of the latter period (November): the price of carp decreased by 3.9 percent, that of silver carp by 9.4 percent, and that of crucian carp remained stable.

The price of vegetables was high. The average price for a cucumber was 1 yuan; eggplant, 0.91 yuan, and green pepper, 1.37 yuan. When we entered the peak of the production season, the price of vegetables dropped greatly, but even in the peak season, the lowest price was still very high. For instance, in August, the average price for cucumbers was 0.12 yuan while eggplant sold at an average price of 0.14 yuan. The average price of green peppers was 0.23 yuan.

The price of fruits remained high during the peak season and the period of lower prices has been shortened. The average price in August for apples was 0.49 yuan and 0.36 yuan for pears. The average price in September rose steeply over that in August. Apples cost 20 percent more, while pears cost 30 percent more.

As we understand it, urban and rural fairs gradually entered a thriving period after November, lasting from Yuan Dan to the New Year's and prices for the majority of the major agricultural and sideline products remained stable throughout.

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CSO: 4007/279

INCREASED FARM MACHINERY SALES REPORTED

Beijing ZHONGGUO NONGJIEHUA BAO in Chinese 12 Mar 86 p 1

[Article by Mo Ji [5459 0644]: "Big Changes, Increased Sales in 1985 Farm Machinery Market Seen in China General Agricultural Mechanization Service Corporation Statistics; Steady Increases in Maintenance and Parts; Still Demand for Field Work Implements"]

[Text] Figures in the annual statistics provided by the China General Agricultural Mechanization Service Corp. show that the net sales of farm machinery commodities throughout China in 1985 were 8.13 billion yuan, 17 percent higher than in 1984; these included 7.41 billion yuan in sales to rural production teams and commune members, accounting for 91.2 percent of net sales, an 18.2-percent increase over 1984. In terms of the value of various categories, except for a 1-percent drop in the category of machinery for processing agricultural products and byproducts, the other six categories all had increases of varying degrees. Those with fairly large increases were: the mechanized farm implements category, which increased 15 percent; the category of agricultural-use power and irrigation machinery increased 12 percent; maintenance and parts increased 23 percent; other categories and the nonagricultural machinery category all increased more than 40 percent.

Looking at the farm machinery market from the beginning of 1985 until the end, although the corporation completed its purchases and sales with increases over the previous year, they were primarily concentrated in the first half of the year, which accounted for approximately 60 percent of purchases and sales for the whole year. Stagnant sales and decreases were common in the second half of the year. We can see that 1985 can be sharply divided into two periods: the first of the year, when demand exceeded supply, and the second half of the year, when supply exceeded demand.

According to analysis, the fundamental cause influencing the changes in the market is related to the state's adjustment of macroeconomic management. The demand exceeding supply in the first half of the year was affected by the "repercussions" of the loss of control over agricultural bank loans in 1984. In the second half of the year, it was primarily due to the state's tightening the money market; in addition, some peasants did not have a clear understanding of policy and adopted a wait-and-see attitude. Furthermore,

some provinces and cities still had quite a few taxes and fees on peasant purchases of tractors, diesel fuel for agricultural use was in short supply, some areas were afflicted by disasters, and the purchasing power declined; these factors also had a direct influence on market changes.

In terms of 1985 sales of principal items, the characteristics of the market were:

Large and medium tractor sales, which had been increasing, began to fall. Starting in the second half of 1984, the sales of large and medium tractors in some areas began to pick up, and in the first half of 1985 the extent of these rises continued to increase. In the second half of the year they started to fall, with the extent increasing each month. By the end of the year, accumulated sales were only 33,000, the lowest annual sales since 1978.

The small-tractor market changed. Starting in June it generally declined. In the entire year, sales of walking tractors dropped 4 percent, but sales of small four-wheel tractors rose 3 percent.

Maintenance and parts grew steadily. Total sales for the year were 23 percent more than the previous year; the main reasons for this are: 1) The usage rate is high for existing farm machines, accelerating wear and tear, and increasing the demand for parts; 2) in recent years the level of tractor ownership has risen greatly, so the potential need for parts is very large; it is predicted that in 1986 the need will continue to grow.

There was a marked drop in drainage and irrigation machinery. Due to the large amount of rain, the sale of implements to combat drought fell significantly; sale of water pumps, for example, fell 16 percent.

Sales of machinery to process agricultural products and byproducts decreased. In the first half of the year, the sales volume was 20 percent higher than in 1984, but it started to fall in the second half of the year. The reasons are: 1) The present ownership level of rice mills and other machinery is close to the point of saturation; 2) there is little variety in new types of processing machinery, and the supply of goods is insufficient; 3) Sales were affected indirectly by tight credit. In 1986 there are more new products entering the market; if credit is easier, sales may increase.

The decline of sales in plant protection machinery was fairly large. Sales were 21 percent lower than in 1984; this was primarily due to the effect of the state's planned reduction of some of the cotton acreage, the reduction in grain acreage, and other factors.

Sales of nonagricultural machine commodities grew quite quickly. In 1985, they were 99 percent more than in 1984.

There is still demand for field work implements. Although there were rises and declines in sales of machine-drawn plows and other field work implements in 1985 as compared to 1984, when the same period of each month is compared, there were marked increases in sales whenever it was the period of intense

cultivation and planting, but sales dropped when there was less cultivation and planting. We can see that peasants really do need farm machinery, but due to the current insufficiency of purchasing funds, they have to make such obvious choices at different months of the year.

12919/12948

CSO: 4007/365

MORE LOANS FOR UNDERDEVELOPED RURAL AREAS

OW152024 Beijing XINHUA in English 1515 GMT 15 Jul 86

[Text] Beijing, July 15 (XINHUA)--The Agricultural Bank of China will "work hard to help underdeveloped rural areas with loans and other assistance," says bank vice-president Dai Xianglong.

In the first half of the year, the bank made commitments for loans of 1.034 billion yuan for agricultural production in China's poorest areas, according to Dai.

Speaking to a national conference of bank officials here Sunday, Dai said his bank will fight poverty with loans for farming, breeding, industry, and commerce.

The bank will also help people in poor areas gain access to information and technology they need for development, he said.

Dai also called on bank officials throughout China to make sure funds are being used as efficiently as possible in underdeveloped areas.

Provincial branches of the bank have been making more loans, particularly to develop grain production and other crops. For example, he said, the Qinghai branch in northwest China this year has loaned 26 million yuan to help more than 50,000 rural families in the province buy fertilizer, seeds, grain, farm tools and livestock which they otherwise could not have purchased.

At the request of the State Council, China's highest governing body, the state-owned Agricultural Bank will make five billion yuan in low-interest loans through 1990 to help 200 of the most underdeveloped of China's 2,000 counties, Dai said.

According to the Seventh Five-Year Plan (1986-1990), China will concentrate on helping the country's underdeveloped areas eliminate shortages of food and clothing and try to improve their living standards by helping them develop commodity production.

"The Agricultural Bank will be in there doing its part to help realize the plan," Dai said.

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CSO: 4020/390

MORE GOODS TO BE CHANNELED TO RURAL AREAS

HK150855 Beijing CHINA DAILY in English 15 Jul 86 p 1

[Article by staff reporter Liu Dizhong]

[Text] China's farmers may soon find more industrial goods on sale in their markets, including imported consumer products.

Efforts are being made by commercial departments throughout the country to open more channels for selling goods in rural areas, where economic reforms have brought widespread prosperity.

Successive bumper harvests over the last few years have resulted in a sharp increase in the purchasing power of China's 800 million farmers and retail sales in rural areas have grown at an annual rate of 16.2 per cent since 1980.

In the first five months of this year, the nation's total retail sales reached 195.33 billion yuan, an increase of 11.1 per cent over the same period of 1985. Of this sum, about 60 per cent came from rural market sales.

A senior Ministry of Commerce official predicted yesterday that rural buying power would increase by an even bigger margin over the next few months as farmers are reaping another bumper harvest of summer grain this year. Wheat output is expected to reach 80 million tons, close to the record harvest of 1984.

However, the official noted, rural markets had failed to meet farmers' demand for colour TVs, sewing machines, bicycles, cloth, washing powder, enamelware, nails, sugar and wine.

The ministry has planned to send more industrial commodities to the countryside, ranging from imported TV sets to Western-style clothes. Meanwhile, the ministry called on businesses to expand the existing service network.

In remote and mountain areas, more trucks will be used to transport goods and help set up mobile business centres, the official said.

The official disclosed that a new flexible pricing policy had been prepared by the ministry to develop commerce in urban and rural areas. Under the policy, shops and production enterprises have the right to set prices of 510 daily necessities ranging from small electrical appliances and cosmetics to some medicines and canned food.

These new measures, he said, are also part of the ministry's efforts to encourage spending and reduce the stockpiling of goods.

In the first five months of this year, the rise in currency withdrawal was much lower than the growth in deposits by rural and urban people. The increase in potential buying power indicated that the markets had failed to meet consumer demand and more and more people, particularly in urban areas, were adopting "wait-and-then-buy" attitude partly because of the poor quality of some goods.

As a result, State goods storage by the end of May was 4.1 per cent up on the same period in 1985. The unsold goods included black-and-white TVs, tape recorders, bicycles and washing machines as well as synthetic fibre products.

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CSO: 4020/390

140 MILLION PEASANT HOUSEHOLDS OWN RURAL COOPERATIVE SHARES

HK180619 Hong Kong ZHONGGUO XINWEN SHE in Chinese 0344 GMT 17 Jul 86

[Text] Beijing, 17 Jul (ZHONGGUO XINWEN SHE)--Rural supply and marketing cooperatives in China have gradually restored their "people-run" nature of cooperative commerce. More than 140 million peasant households now have shares in rural supply and marketing cooperatives and more than 90,000 peasants are now holding leading posts in councils and supervisory committees of rural supply and marketing cooperatives.

With a history of over 30 years, rural supply and marketing cooperatives in China now have some 4 million staff and workers and more than 600,000 supply and marketing points. They were originally people-run cooperative businesses and were later gradually changed into official-run businesses. Since 1982, more than 35,000 grassroots supply and marketing cooperatives and 600,000 supply and marketing points in the country have checked and expanded their shares. They have verified the previous share money of 360 million yuan and made a retroactive payment of 120 million yuan as dividend to shareholders. Thus, peasant households have actively bought shares. Those who have shares in rural supply and marketing cooperatives now account for 85 percent of the total peasant households in the country. Both the fixed and current assets of rural supply and marketing cooperatives have increased largely, with the fixed assets value standing at 17.9 billion yuan.

Rural supply and marketing cooperatives have now joined hands with more than 10 million specialized households and combines in business operations and widely promoted the "agent system." Last year alone, agents stored and delivered more than 11 million tons of various commodities and the total volume of commodities purchased and sold by agents amounted to some 2.9 billion yuan.

Rural supply and marketing cooperatives have accumulated funds from the public to run industrial processing enterprises. Last year, they set up some 30,000 industrial processing enterprises and employed more than 3 million people from the surplus rural workforce. The annual output value of the enterprises reached some 16 billion yuan.

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CSO: 4007/482

JOBS PLANNED FOR RESIDENTS IN RURAL AREAS

HK300134 Beijing CHINA DAILY in English 30 Jul 86 p 2

[Article by staff reporter Zhao Jinming]

[Text] The state is planning to provide 50 million jobs to rural residents by 1990 through establishment of township businesses.

This is part of the state effort to deal with the manpower surplus in rural areas that has been growing since adoption of the contract responsibility system.

Another 100 million rural citizens will join the workforce of township businesses by 1995. The plan was revealed yesterday by Zhang Yi, deputy director of the Township Business Bureau under the Ministry of Agriculture, Animal Husbandry and Fishery.

The plan is based on the fact that there is a swelling population and a declining area of arable land in the countryside, he said.

In 1952, the countryside had a labor force of 180 million with 106 million hectares of arable land. But now it has 375 million potential workers with an arable land area of only 100 million hectares.

By the end of 1985, there were more than 12 million township businesses across the country using nearly 70 million people--19 per cent of the total rural labour force and equal to 60 per cent of the total urban work force of the country.

With township businesses becoming a powerful new factor in the country's economy, China's rural commodity production has brought a "historical change" to the relations between town and country.

Urban-rural cooperation now involves establishment of state-owned, collective and private businesses.

The output value of rural industry, building trade, transport businesses and commerce reached more than 40 per cent of the total value of the rural social product by the end of last year.

With fixed assets valued at 75 billion yuan and 59 billion yuan of circulating funds, the township businesses delivered 13.72 billion yuan in taxes to the state last year.

Township industries mainly focus on production of coal, silk, silk products, garments, building materials, machinery and spare parts.

Last year, these industries turned out 227 million tons of coal, 11,200 tons of silk, and 5.5 million metres of silk fabrics.

The township industries also made efforts to break into the world market. In 1985, more than 6,000 rural industries undertook export production and earned \$4 billion in foreign currency.

To date, 870 township businesses have established relations with foreign firms in the form of cooperative management and joint venture.

Over 1,000 businesses have set up contacts with foreign companies, a national township commodity export fair will be held at the Beijing Agricultural Exhibition Centre from August 25 to September 5.

Township business from the country's provinces, municipalities and autonomous regions will participate in the fair. On display will be more than 10,000 famous brands, quality products and specialities, all available for export.

Meanwhile, a sales exhibition of the products produced by township businesses in Fujian will be held at the Beijing International Exhibition Centre from August 15 to 30.

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CSO: 4020/393

NATIONAL

BRIEFS

TEA EXPORTS TO JAPAN--From January to April, Japan imported 4,871 tons of tea from China, a 42 percent increase over the same period last year. The import volume each month has been over 1,000 tons. [Excerpt] Beijing ZHONGGUO SHANGYE BAO in Chinese 12 Jul 86 p 3]

CSO: 4007/479

FERTILIZER TAX EXEMPTIONS, PRICE REDUCTIONS ANNOUNCED

Hefei ANHUI RIBAO in Chinese 18 Mar 86 p 1

[Article: "Anhui Temporarily Lowers Price, Gives Tax Exemption and Subsidies for Chemical Fertilizers Produced by Small Plants; Provincial Government Yesterday Issued Urgent Announcement"]

[Text] Yesterday the provincial government issued an urgent announcement of the decision that from 19 March of this year, there will be temporary price reductions, tax exemption, and subsidies in effect for minor chemical fertilizers produced by small plants. The specific contents are as follows:

1. Range of Price Reductions

The maximum retail price per ton of ammonium bicarbonate (carbon content above 16.8 percent) is 175 yuan and the maximum producer price is 145 yuan; the maximum retail prices and maximum producer prices for bulk ordinary superphosphate (not including major phosphate fertilizer from the Tongling Chemical Industry Main Plant) are: 12-percent phosphorus content, 140 yuan and 107 yuan, respectively, per ton; 14-percent phosphorus content, 154 yuan and 124 yuan, respectively, per ton; 16-percent phosphorus content, 171 yuan and 141 yuan, respectively, per ton; 18-percent phosphorus content, 180 yuan and 150 yuan, respectively, per ton.

2. Tax Exemption and Financial Subsidies

According to production plans handed down by the province and the original store of ammonium bicarbonate, for each ton sold by small nitrogen fertilizer plants, the average subsidy will be 20 yuan after exemption from the product tax. Supply and marketing cooperatives shall receive a subsidy of 27 yuan for each ton of Anhui-produced ammonium bicarbonate sold from their stock. According to production plans handed down by the province and the original store of superphosphate, for each ton sold by small phosphate fertilizer plants, the subsidy will be 20 yuan; based on their stock at the end of February, the supply and marketing cooperative system will receive a 20-yuan subsidy for each ton of 12-percent phosphorus content, and a 26-yuan subsidy for each ton with a phosphorus content higher than 14 percent. There are no subsidies for fertilizer not meeting standards. From 1 April 1986, small nitrogen fertilizer plants are exempt from the product tax for 3 years.

The above subsidies are limited to nitrogen fertilizer produced in Anhui and to small phosphorus fertilizer plants with a production permit issued by the province. Supply and marketing cooperatives will receive no subsidies at all for sales of chemical fertilizers from other provinces. All subsidies for ammonium bicarbonate produced by provincial chemical fertilizer plants will be given by the provincial financial departments to the provincial Petroleum Chemical Department. The responsibility for others will be shared according to the level and according to the current financial system.

3. Sales Methods

After the prices of low-grade chemical fertilizer have been lowered, the production plants can sell it themselves, or they can hand it over at the producer price (145 yuan) and let supply and marketing cooperatives sell it, or they can commission grassroots communes to sell it. No matter what method is adopted, the retail price per ton can never exceed 175 yuan.

4. The Quality of Chemical Fertilizers Produced By Small Plants Must Be Assured: Whatever does not meet the standards must not leave the factory. Economic committees and industrial and commercial administrative management departments at all levels should carry out strict supervision and inspection and seriously deal with enterprises making products of inferior quality; those who use fake products to cheat peasants should bear full responsibility for their crimes. Revenue and tax departments and departments in charge of industry and commerce should inspect and punish those who falsely report their stores.

The announcement also stated that, as it is currently the time of spring cultivation, in order not to lose the agricultural season, each locality is requested to lower the price of chemical fertilizers produced by small plants as soon as possible and to implement the subsidy measures at the grass-roots level.

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CSO: 4007/356

BRIEFS

RURAL SAVINGS--In the first half of the year, rural savings in Anhui increased by more than 340 million yuan; per capita savings have increased from 39 yuan at the end of last year to 47 yuan. The provincial Agricultural Bank has opened up 68 new savings banks. [Excerpt] [Hefei ANHUI RIBAO in Chinese 16 Jul 86 p 1]

RAMIE OUTPUT--This year the province originally planned to sow 100,000 mu to ramie, but the actual sown area was nearly 200,000 mu. Calculated on a per mu yield of 50 kilograms, gross output may reach 10,000 tons. In addition to fulfilling the provincial export plan of 100 tons and internal sales of 3,000 tons, the ramie surplus will be nearly 7,000 tons. [Excerpt] [Hefei ANHUI RIBAO in Chinese 30 Jul 86 p 2]

RURAL EXPENSES SURPASS INCOME--Based on a rural sampling, in the first half of the year peasant per capita income was 150.29 yuan (excluding income from savings and loans), an increase of 6.56 yuan over the same period last year, or an increase of 4.6 percent. Per capita expenses were 162.27 yuan (excluding expenses for savings and loans), an increase of 7.89 yuan over the same period last year, or an increase of 5.1 percent. The rate of increase for expenses is higher than the rate of increase for income. Production costs are 48.92 yuan, a 4.7 percent decrease over last year. Per person buying for fixed assets of a productive nature are 9.73 yuan, a decrease of 17.1 percent over the same period last year. On the other hand, living expenses have rapidly increased, per capita expenses are 91.04 yuan, an increase of 10.8 percent over last year. Because prices for some production materials have increased this year, the actual level of investment for agricultural production has been lowered. [Excerpt] [Hefei ANHUI RIBAO in Chinese 26 Jul 86 p 1]

CSO: 4007/493

BEIJING

WATER CONSERVATION MEASURES FOR BEIJING DISCUSSED

OW180911 Beijing XINHUA in English 0621 GMT 18 Jul 86

/Text/ Beijing, 18 Jul (XINHUA)--The Beijing municipal government has called for "immediate and long-term measures" to solve the city's nagging problem of water shortage.

Officials of the Ministry of Water Resources and Electric Power and the municipal government discussed strategic programs for fighting against water shortage at a meeting which closed here Thursday.

They agreed that saving water, exploring and protecting new water resources are still most effective measures for the present and future.

The water resources for each Beijing resident only accounts for 1/6th of the national average and 1/25th of the world standard. Beijing is listed after 100 other capitals and major cities in the world in terms of water scarcity, the meeting was told.

Qian Zhengying, minister of water resources and electric power, said at the meeting that Beijing must be turned into a "watersaving city." She noted that the city's total industrial output value increased by 65 percent between 1981 and 1985, but its industrial consumption of water decreased by 20 percent. "This shows there are great potentials in water saving which should be the most effective means to ease the water shortage in the near future," she said.

The minister also suggested an overall plan in water supply in north China where Beijing is located.

The city's annual consumption of water has reached 4.2 billion cubic meters, but its water reserves often declined to less than 3.5 billion cubic meters.

The municipal authorities issued two regulations in June on awarding enterprises and institutions that save water and punishing those that waste water due to carelessness.

While carrying out these regulations, experts urged the government to step up sewage purification. Beijing produces 2 million cubic meters of sewage every day.

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CSO: 4020/395

REGULATIONS TO REDUCE PEASANTS' BURDEN DISCUSSED

Lanzhou GANSU RIBAO in Chinese 8 Mar 86 p 1

[Article: "Provincial Central Committee and Provincial Government Issue Regulations Reducing Peasants' Burden; Forbid Unauthorized Assessments, Unauthorized Fees, Unauthorized Fund Drives, Unauthorized Fines Among Peasants"]

[Text] In order to prohibit unauthorized assessments, unauthorized fees, unauthorized fund drives, and unauthorized fines directed toward peasants, to truly lighten the peasants' burden, and to protect the peasants' enthusiasm for production, the provincial central committee and the provincial government recently formulated and issued several policy regulations.

1. The peasants' burden must be limited to "specified items and limited amounts." They reaffirmed adherence to "Specific Regulations Concerning Several Current Rural Policy Questions" issued by the provincial central committee and provincial people's government in June 1984; except for taxes which peasants pay to the state according to the law, the total amount of accumulation funds, public welfare funds, and management fees (including village and commune cadre subsidies) retained by local cooperative economic organizations, using villages as the unit of calculation, must be kept to within 5 percent of the peasants' net income for the previous year. Rural education, family planning, communication construction, and other general plan fees at the most cannot exceed 2 percent of the peasants' net income in the previous year. No unit or individual can arbitrarily increase this.

The policy of "recuperate and revive" shall continue to be implemented in especially poor townships, villages, and households. For those whose per capita annual net income is less than 150 yuan, financial and tax offices can legally reduce the agriculture tax according to regulations, and there can be smaller fund charges and general plan fees according to the circumstances.

2. Strictly limit voluntary work. In general, each able-bodied person should be responsible for 10 workdays in the year, and the maximum must not exceed 15. All able-bodied people whose legal residence is in the countryside must all take on the responsibility, regardless of whether they are engaged in agriculture or nonagricultural work. Voluntary work can only

be used for public projects, voluntary tree-planting, flood prevention, or emergencies. In general, money cannot replace labor, unless the peasant households are personally willing.

3. Reduce the number of staff enjoying subsidies. Administrative villages usually are staffed with 2 to 3 cadres, and production cooperatives with 1 to 2 cadres. Teachers hired by the people who receive subsidies from the state of who have been assigned land as compensation cannot make further assessments for subsidies from peasants. The payment for forestry, veterinary, hydroelectric, rural doctors, and other personal should all come from the individual's income from the business for which he has contracted, or it should be supplemented by the relevant professional departments.

4. Determine ways to collect reasonable contributions. The agriculture tax is based on the area of contracted land (including private plots). Accumulation funds, public welfare funds, management fees, and general plan fees are based on the peasants' net income for the previous year, collected according to the proportion required by the first clause, voluntary labor is according to the number of able-bodied people.

5. Offices at the township level and above and various public undertakings operated by departments should do what they are capable of. It is not allowed to make unauthorized demands for payment from peasants in the name of "people-oriented" or "people-oriented and state-assisted." It is forbidden to carry out various activities with such names as "support" or "donations."

6. State administrative departments and institutional units which provide the countryside with various economic techniques and social services cannot let profitmaking be their goal; in general, they primarily provide service at no charge or at a low charge. Only the cost of production can be charged for various licenses, certificates, signs, and account books, and the standard and procedure must be approved by the government above the county level. Cultural presentations in villages should follow the principle of voluntary participation, with the peasant families deciding themselves. No department or unit can use administrative measures to force certain actions or rigidly make assessments.

7. Let industry subsidize agriculture. Following the growth of township and town enterprises, some profit can be obtained as appropriate from collective enterprises, which can serve as three of the retained funds and the general plan fee, in order to reduce the peasants' burden.

8. Strengthen control of the peasants' burden. Every year each township and town should seriously formulate a preliminary plan "limiting the number and amount" of the peasants' burden. After being discussed and passed by township and town people's congresses and being reported to the county people's government for approval, the townships and villages will act together to collect the funds. This will be set at once a year, and it is not allowed to arbitrarily add to it during the year. In the future, all things touching upon regulations, from any level of any department, which are

connected with increases in the peasants' burden must be submitted to the rural work departments of party committees above the country level, which will examine them according to policy regulations; they must be collected together and submitted to the party committee or government for discussion; only after approval has been granted and documents issued may they be implemented.

9. Practice democratic control of finances, and show strict financial and economic discipline. Specific amounts from the various funds and general plan fees must be used for specific purposes. Special people should be responsible and the actual accounts, for example, should be settled that year and made public. It is strictly forbidden to use funds collected over the years by cooperative economic organizations or sold-off collective property to take the place of assessments. It is strictly forbidden to unfairly distribute funds from villages, communes, or affiliated enterprises. Offices and institutional and enterprise units who are behind in payments to rural cooperative economic organizations should earnestly pay back the debts and pay interest according to the bank loan rate. No unit can intercept or divert to other uses state outlays, various subsidies, and emergency funds appropriated to help rural education, health, family planning, and water conservancy. Promote hard work, thrift, and conservation; oppose ostentation and waste. Adamantly forbid social invitations, giving presents, large-scale eating and drinking, and other unhealthy tendencies. In the future, peasants have the right to resist, refuse, and report to higher authorities those who break the above regulations by making unauthorized assessments, deductions and fines.

10. Whoever breaks any of the above regulations, in addition to being directed to change, will be given criticism education or necessary punishment according to the severity of the offense. Every level of party committee rural work sections should organize relevant departments to annually conduct serious examination of how to lighten the peasants' burden. When problems are discovered, they should be dealt with promptly.

Every level and every department in Gansu should follow each of the above regulations in inspecting and clearing up their work. Whenever previously formulated methods conflict with these regulations, these regulations shall be the standard.

12919/12948
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BRIEFS

VEGETABLE PRODUCTION INCREASED--Nanzhou, 24 July (XINHUA)--Arid Gansu province, in northwest China, will provide citizens in 20 cities all over the country with 150 million kilograms of fresh vegetables, including peppers, garlic, eggplants and onions this year, more than 50 percent higher than 1985's figure. That has resulted from the agricultural reform and regulating the structure of agricultural production, said a local official. Compared with five years ago, the official said, the people of the province were supplied with more than 30 million kilograms of vegetables by Sichuan and Guangdong provinces in winter and spring annually. Gansu province is located on the Loess plateau where the vegetable growing season is about one month later than the provinces in south China. In recent years, the area used to grow vegetables has reached 17,000 hectares, the official said. Meanwhile, the province has introduced some fine breeds of vegetables. In some counties, the yield of onions has reached 90,000 kilograms per hectare, and lilies come to 45,000 kilograms per hectare, double that of the output of the southern provinces. [Text] [Beijing XINHUA in English 1445 GMT 24 Jul 86 OW] /12858

SNOW IRRIGATION OF WHEAT--Lanzhou, July 17 (XINHUA)--Melted snow from nearby mountains could be used to turn part of China's notoriously arid northwest into a major wheat production center, a local official said today. Scientists and local farmers in the Gansu corridor have worked together to produce 4,869 kilograms per hectares of spring wheat this year from a 66,000-hectare field, up 1,359 kilograms per hectare over 1983, before irrigation, according to the official. Local agricultural officials endorsed the method Wednesday and said they hoped it could turn the corridor into China's leading producer of high-yield spring wheat within a short time. With more than 333,000 hectares of wheat fields, the Gansu corridor is already one of the more important spring wheat areas in northwest China. But its output has been low. "The weather is cold and dry," one official said. "And traditional farming methods are not all that productive." To improve productivity for the area's only crop of any size, scientists at the Gansu Agricultural Research Institute began studying the area in 1981. Three years later, they began experimenting with snow irrigation. They also tried using more phosphate fertilizer than had been customary, and they experimented with planting the wheat seeds as close together as possible without risking damage to the crop. More than 100,000 rural households have helped make the experiments a success, the official said. [Text] [Beijing XINHUA in English 1339 GMT 17 Jul 86 OW] /6662

CSO: 4020/393

TYPHOON CAUSES SERIOUS DAMAGE TO LARGE AREA

HK140320 Hong Kong ZHONGGUO XINWEN SHE in Chinese 1455 GMT 13 Jul 86

[Report: "Typhoon No 7 Causes Serious Damage in Guangdong Province"--
ZHONGGUO XINWEN SHE headline]

[Text] Guangzhou, 13 Jul (ZHONGGUO XINWEN SHE)--When this year's Typhoon No 7 landed in the coastal areas of Hulai, Lufeng, and other counties, it caused serious damage to 31 counties and cities in 6 prefectures and cities of Shantou, Huiyang, Meixian, Foshan, Guangzhou, and Zhuhai to varying degrees. According to preliminary estimates, the typhoon caused direct losses of over 600 million yuan. Leaders and departments at various levels in the typhoon-afflicted areas were making every effort to combat the disaster and provide disaster relief.

The strong typhoon caused damage to vast areas. Moreover, after landing, the typhoon moved slowly, staying for a long time in Shantou and Huiyang prefectures. Consequently, the two prefectures were hit by strong winds and rainstorms for more than 30 hours.

The typhoon brought heavy and torrential rain to most regions in Guangdong Province and even catastrophic torrential rain to some regions from 1500 on 11 July to 2100 on 12 July. As a result, torrents of water rushed down the mountains, endangering reservoirs and breaching river embankments. According to preliminary statistics, 5.88 million mu of farmland in the province was submerged, including 4.17 million mu of paddy fields; more than 1,200 houses collapsed and over 100,000 houses were damaged; 680 bridges, 762 kilometers of roads, and over 140 kilometers of hillside embankments and reservoirs were washed away or damaged. Hillside dams, culvert gates, and other water conservancy projects in more than 5,000 places were damaged and over 4,000 kilometers of electrical wire and telephone lines were cut off.

Following the disaster, leaders at various levels in disaster areas went all out to organize and direct the people in fighting the disaster and sending relief to the afflicted areas. Shantou and Huiyang prefectures were severely hit by the typhoon. At present more than 1 million cadres and people have taken part in the work of dealing with emergencies and providing disaster relief in the two prefectures. More than 6,000 leaders at all levels in Haifeng and Lufeng counties led 460,000 people in combating the disaster and providing disaster relief.

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CSO: 4007/471

OUTPUT, AREA OF CASH CROPS REPORTED

Zhengzhou ZHONGGUO CHENGXIANG XINXIBAO in Chinese 10 Jul 86 p 2

[Excerpts] Fruit: This year the area sown to fruit is 2,250,000 mu, an increase of 80,000 mu over last year, 1,150,000 mu have been productive. Estimated output is 9 million dan, an increase of about 1,400,000 dan, over last year. Of this amount, 120,000 mu have sown to bananas, it is estimated that gross output will exceed 2 million dan. About 900,000 mu have been sown to oranges, 550,000 mu have been productive and estimated output is 3,400,000 dan, an increase of 21.4 percent over last year.

Sugarcane: The area sown to sugarcane is 3,160,000 mu, an increase of 110,000 mu over last year. Of this, more than 60 percent has been sown to Guitang No 11 fine variety sugar, gross output may exceed 9 million tons. Raw sugar output may be more than 8 million tons, an increase of more than 600,000 tons over last year.

Flue-cured tobacco: About 130,000 mu have been sown to spring tobacco, estimated output will be about 260,000 dan, a slight increase over last year. However, this year the region will need 800,000 dan of tobacco, and more than 500,000 dan will be transferred from other provinces.

Ramie: 76,000 mu have been sown to ramie, estimated gross output may reach 80,000 dan, but the region will need 120,000 dan, and there will be a shortage of 40,000 dan.

Jute, ambari hemp: This year the area sown to jute and ambari hemp is 370,000 mu, a decrease of 930,000 mu over last year, estimated output is 1 million dan, a decrease of 3,600,000 dan over last year. But last year the region had a bumper harvest of jute and ambari hemp, more than 1 million dan of processed hemp is in stock waiting to be sold, therefore, a shortage is not expected.

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CSO: 4007/478

ANSWERS GIVEN TO QUESTIONS ON GRAIN CONTRACT POLICIES

Shijiazhuang HEBEI RIBAO in Chinese 16, 17 Mar 86

[16 Mar 86 p 2]

[Text] [Question] What changes have there been this year in the fixed grain-purchase policies?

[Answer] The elimination of centralized grain purchase and its replacement with fixed purchase contracts is an important policy decision adopted by the CPC Central Committee and the State Council and is a major reform of the grain purchase system. This year the state is continuing to implement the policies of fixed grain-purchase contracts. Learning from the experiences and lessons of the past year, this year it will make reasonable reductions in the amount of fixed purchases, make a relative enlargement in the proportion of negotiated-price purchases in the market, improve the methods of fixed purchases, perfect the contract system, and promote the steady growth of grain commodity production.

[Question] Why are fixed grain-purchase contract obligations being adjusted?

[Answer] The fixed grain-purchase contract obligations are determined by the condition of grain commodity production and the state's need for grain. The state plan to appropriately reduce fixed grain-purchase contracts is intended to expand the market's regulative role. At the same time that the state is reducing its fixed grain-purchase contract obligations, it is arranging the responsibility for a certain amount of negotiated-price purchases, so that peasant grain growers can increase their income from increased grain output.

[Question] In adjusting the fixed grain-purchase contract obligations, is it the fewer, the better?

[Answer] Due to the influence of many different factors, the price of grain on the free market is sometimes high and sometimes low, and the changes are very big. If the amount of fixed purchases is too little, when the market price is lower than the proportionate price, the peasants' income will be reduced. Therefore, the contract serves to protect the peasants' income, and so it is not at all true that the smaller the quantity of fixed purchases, the better. The principles for the state's adjustment this year

of its fixed grain-purchase contract obligations are: in areas where there is potential for developing grain production and where there are few opportunities for diversified production, to reduce by appropriate amounts the fixed purchase contract obligations and expand purchases at negotiated prices; in places where there is quite a lot of land and the grain commodity rate is quite high, to not reduce the obligation to make fixed purchase contracts; in places where the commodity economy is developed and there are many opportunities for diversified production, in principle to not reduce its fixed grain-purchase contract obligations; in order to develop production of vegetables and other nonstaple foods in the outskirts and mining areas of large and medium cities and in neighboring counties, the fixed purchase obligations can be reduced appropriately; in poor mountain areas and flatland areas, the previously announced policy of exemption from purchases will be continued, but in considering the reality of restructuring production, make appropriate arrangements for quotas of purchases at the proportionate price, with cities and counties in control and actively organizing purchases according to how good the harvest is. Therefore, in general the obligations have been reduced, but for specific production units and rural households, some have decreases, some have neither increases nor decreases, and some have increases, thus satisfying the grain-selling requirements of peasants in each type of area, avoiding both "difficulty in selling grain" and "difficulty in purchasing grain."

[Question] In regard to fixed purchase contracts, can parties make contracts if they want to and not make contracts if they do not want to?

[Answer] Recently, Premier Zhao Ziyang stated: "The change from centralized purchases and sales to fixed purchase contracts is in the correct direction and undoubtedly is tremendous progress. Now we are just starting to get on track; some want us to do this by completely relying on economic measures and only exchanging parity price production materials with peasants, but at present the necessary conditions are lacking. All we can do at present is to go to economic contracts, where as much as possible we supply to peasants at the parity price some of the production materials, exchanging things with peasants; this at the same time is the state's obligation and must be fulfilled." This means that this year's fixed purchase contracts are both economic contracts as well as state obligations and serious political obligations; we must ensure their fulfillment.

[17 Mar 86 p 2]

[Text] [Question] How can we improve the fixed purchase methods?

[Answer] Last year was the first year of implementing the fixed purchase contracts; due to a lack of experience, in some places there appeared egalitarian methods, such as assigning responsibilities according to the number of people or the area of land, so that responsibilities were unfairly divided. In some places the obligations were too heavy, and in some places the obligations were too light, so that the peasants' grain-selling requirements could not be satisfied; in some other places the fixed purchase obligations was only determined for townships and villages and was not discussed and

determined with peasant households, causing some of the fixed purchase obligations to come to nought. This year we want to improve the fixed purchase procedures: in accordance with the principles of adjusting obligations and with reference to the level of production and the actual ability to sell, we shall adopt the method of integrating state assignment of fixed purchase obligations and discussions with peasants, so that the higher and lower levels repeatedly discuss and determine things. This avoids egalitarianism, inflexible assignments of responsibilities, and unfair distribution of duties; it also takes account of the entire situation, truly implementing the national fixed purchase plan among grassroots production units.

[Question] After the fixed purchase obligation has been set, if peasants still have surplus grain they want to sell, will the state buy it?

[Answer] In normal harvests, the fixed purchase contract obligation must be assured of fulfillment; the state will actively carry out negotiated-price purchases of surplus grain outside of the contract. The negotiated purchase price fluctuates with the market, but the maximum will not exceed the original above-quota price. Peasants who still have surplus grain after fulfilling their fixed purchase contract obligations should actively sell it to state grain departments, supporting the development of the four modernizations.

[Question] Have there been changes in the prices for different kinds of fixed purchase grains?

[Answer] The three major grains in fixed purchase contracts are still rice, wheat, and corn. In order to make sure we meet the needs of large and medium cities in the province, based on the principle of matching the need to the supply, some soybeans, ji [0679] beans, and red beans have also been included as appropriate. As for the purchase price for grain within the fixed purchase contract, this year the proportionate price paid in 1985 will still be used for purchases; the price will not change.

[Question] What responsibilities and duties do state grain departments have in the fixed purchase contracts?

[Answer] Economic contracts must carry out the principle of equality and mutual benefit. Both parties to the contract have equal legal person status, economic rights, and economic duties. The fixed purchase contract responsibilities and duties which grain departments should carry out are: no matter what changes there have been in the market price, the state grain departments guarantee purchase at the proportionate price of all grain in the fixed purchase contract; carry out the policy of awarding chemical fertilizer sales to peasants who turn over grain, that is, for every 100 jin of wheat or rice sold within the fixed purchase, the sale of 10 jin of high-quality chemical fertilizer shall be awarded; for every 100 jin of corn, the sale of 5 jin of high-quality chemical fertilizer shall be awarded, and for every sale of 100 jin of peanuts, the sale of 30 jin of high-quality chemical fertilizer shall be awarded; assure strict adherence to the state policies setting quality standards and letting quality determine the price,

and strictly forbid arbitrary raising or lowering of the grade and the price; assure prompt settling of accounts and payment, settle accounts for each individual household, let a handful of grain become a handful of money; except for the agriculture tax, state grain departments are not allowed to make any deductions for other agencies, nor can they accept grain from individual households but wait to settle accounts with the entire village; as much as possible they should go into the countryside to check quality, arrange schedules for different villages, and go into the countryside to make purchases, so that the masses delivering grain find the quality-inspection, weighing, loading and unloading, settling accounts, refreshments, and rest as convenient as possible. The vast peasant masses are welcome to monitor the responsibilities and duties of the grain departments.

[Question] If, for a variety of reasons, the fixed grain-purchase contract cannot be honored, what should be done?

[Answer] Once a contract for fixed grain purchases has been signed, it is legally valid. Except for those afflicted by natural disasters which cannot be resisted by human power, the fulfillment of the contract must be guaranteed. Changes in and termination of a contract are legal acts. If contracts cannot be honored due to natural or human disasters and one party requests that the contract be changed or terminated, the contract can only be changed or terminated after both parties agree and after upper-level responsible departments and authorizing units have made investigations and given approval. Contracts cannot be changed or terminated in the following circumstances: 1) when sales of grain to a third party affect fulfillment of the fixed purchase contract obligations; 2) when planting crops other than those required in the fixed purchase affects fulfillment of the fixed purchase contract obligations; 3) when land rights are transferred, the fixed grain purchase contract should go with the land, and the contract cannot be terminated without permission; 4) the contract cannot be terminated when one party to the contract brings up reasons unrelated to the other party. Grain in the fixed purchase contract cannot be replaced by disaster-readiness grain or grain from other rural sales.

[Question] How can the contract system be improved and perfected?

[Answer] With mutual discussion and agreement as the prerequisite, contract clauses should clearly state the contract's principal legal persons and the purpose for signing it, the variety, amount, and quality of fixed purchase grain; the fixed purchase price and method of settling the account; the time limit, place, and method for fulfillment of the contract; and the rights, duties, and contract violation responsibilities borne by both parties to the contract. Authorizing the contract shall follow the principle of voluntary participation. Given the fixed grain-purchase contracts touch upon many areas, the quantities are large, and they are both economic contracts and national obligations, in general county and township governments may authorize contracts.

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SCIENTISTS HELP FARMERS IMPROVE AGRICULTURE

OW260306 Beijing XINHUA in English 0015 GMT 26 Jul 86

[Text] Shijiazhuang, 26 July (XINHUA)--Science has helped increase the annual average income nearly five fold since 1983 for each member of the population in a 38,000-square kilometer area in eastern Hebei province.

The Heilonggang area, which encompasses 50 counties and cities, has scarce water resources for irrigation and thin, alkali soil. For a long time in the past, the population depended on government relief for a meager living.

Things began changing in 1982 when 1,000 scientists came to help the local people to improve the soil and spread new agricultural techniques. The project, classified as a key one in China's 6th Five-Year Plan (1981-86), was coordinated by China's science and technology commission. Scientists helped local farmers combat dry weather and alkali soil with new techniques involving fertilizer and manure, new seeds, changing harvesting schedules and irrigation systems.

As a result, the area was able to sell an average of 750,000 tons of grain, 450,000 tons of cotton and 750,000 tons of pears and dates a year to the government between 1984 and 1986.

In one part of Heilonggang alone, a 400,000-hectare experimental field, an investment of 29 million by the central government has brought in an extra 380 million yuan to the plain.

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HEBEI

BRIEFS

FOREIGN EXCHANGE--As of the end of June, the provincial Cereal, Oil, and Food Import and Export Corporation earned more than \$127 million U.S. in foreign exchange from exports, accounting for 79.1 percent of this corporation's foreign exchange plan for the year, an increase of 198 percent over the same period last year. This year the export plan for the corporation increased 47.7 percent over last year. In May alone the corporation earned \$32 million U.S. in foreign exchange. [Excerpt] [Shijiazhuang HEBEI RIBAO in Chinese 11 Jul 86 p 2]

CSO: 4007/479

PROVINCE TRYING TO CONVERT NATURAL RESOURCES INTO EXPORTS

HK160534 Beijing CHINA DAILY in English 16 Jul 86 p 2

[Article by staff reporter]

[Text] Henan Province, sometimes called the "heartland of China," is bidding to turn its abundant agricultural and natural resources into an abundance of exports.

A top sesame producer in China, the province usually cultivates 334,000 hectares of sesame a year, with an annual output of 15 million kilograms.

This year, the province hit on the idea of building a white sesame export-oriented production centre involving 8,000 hectares. The plan is to reap 3,000 tons of the crop for export, from which an estimated \$2.1 million could be earned.

The centre, when completed, will embrace eight counties, and combine scientific research, breeding and production work.

Rapeseed, another important crop in the province, is expected to see a record harvest of 260 million kilograms this year.

Due to improvements in rapeseed quality, some of the crop has reached export standards. This year, the province signed contracts to ship the produce abroad for the first time, according to provincial officials.

Henan Province last year also harvested 15.25 billion kilograms of wheat despite bad weather and insect pests, second only to 1984's 16.5 billion kilograms.

The province is a major wheat cultivation area, with about 4.67 million hectares, according to the newspaper HENAN DAILY.

On the natural resources, the province is expected to produce 300,000 million cubic tons of natural gas, 15 million tons of crude oil and 800,000 tons of oxidic bauxite by the end of the Seventh Five-Year Plan (1986-90).

Henan also tops other provinces in reserves of molybdenum and blue asbestos. There are more than 100 different minerals in the province.

But lack of advanced technology and financing has forced the province to sell these minerals as raw materials. Plans are now afoot, however, to do more mineral processing for export.

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CSO: 4020/390

ANIMAL HUSBANDRY'S PROSPECTS DISCUSSED

Zhengzhou HENAN RIBAO in Chinese 7 Mar 86 p 2

[Article by Chang Jingwei [1603 2529 5588]: "Economic Strength Soon To Be Tapped"]

[Text] The question this article attempts to answer is: is animal husbandry capable of shouldering the historic mission bestowed upon it by the new agricultural economy? How large of a role can it play in reviving Henan's agricultural economy?

Comparing 1978 and 1984, the output value of Henan's animal husbandry increased from 990 million yuan to 2.08 billion yuan; it doubled in 6 years, a splendid result, but not only was its relative position within agriculture lower than in the 1950's, it was virtually in last place nationwide. But in 1985, the output value of animal husbandry suddenly increased 900 million yuan, approaching the total sum of the previous 6 years. Thus, we can see that Henan really is not lacking the necessary conditions for developing animal husbandry; while the potential has not been brought very much to the fore, the abundant potential strength of Henan's animal husbandry economy can be seen in the following analysis.

Economic Strength of Existing Animal Herds: Animal production in the past, due to a lopsided pursuit of quantity, neglected results, and the productive force of animal herds was far removed from the production level it should have had in reality. Let's talk about swine and chicken. In countries with fine conditions for raising live pits, the slaughter rate is mostly 150 to 200 percent; although in recent years the slaughter rate in Henan has been much higher than in previous years, it is only about 60 percent, still not reaching the provincial level in the early 1950's of more than 80 percent. The main casues are the low protein content of feed and the high death rate from epidemics. If only some of the cakes and meal in Hanan were not used directly as fertilizer but were used as compound feed which would pass through the pig's stomach and then be applied to the fields, if at the same time epidemic prevention methods were improved, and if the slaughter rate for the current cuppy of pigs were increased to 100 percent, the number of pigs slaughtered for their meat in Henan could reach more than 16 million every year. Figuring 200 yuan for each pig, the cash income could be about 3.2 billion yuan. As for raising chickens, in better chicken-raising countries, individual chickens annually produce approximately more than 30 jin of eggs, but for the 150 million chickens kept in Henan, the average annual

egg output for each chicken is less than 5 jin. The crucial factors are mainly poor varieties and many old chickens. We just need to improve the varieties, replace the older chickens, make appropriate changes in feeding conditions, and do a good job of preventing epidemics; even if the individual egg output of the current supply of chickens is only increased to 16 jin, Henan's annual output of chicken eggs could increase from 740 million jin to 2.4 billion jin; adding on about 200 million jin of chickens that are culled out, the output value could be maintained at 2.6 billion yuan.

Economic Results Brought by Rational Use of Agricultural Products and Byproducts: Every kilogram of straw and weeds contain 1.7 thermie of digestion energy that can be used by cattle and sheep, almost half of the 3.7 thermie in each kilogram of corn. In Shenqiu County in Henan, which has more than 970 people per square km, there is only 1.2 mu of arable land per capita. There are almost 190,000 head of large livestock, mostly cattle, which are primarily fed on straw from crops; on the average, the straw from 5.5 mu of cultivated land can support 1 large stock animal; more than 50,000 head of young animals are bred each year; on the average, only 1 animal is bred on each 20 mu of land, so the potential is very great. In Henan, there are 1.5 mu of arable land per capita and the per-mu yield is close to that of Shenqiu County; if the level of Shenqiu County could be reached, the number of large livestock on hand could grow from the current less than 9 million to 18 million; the number of young animals could increase from more than 1 million to 5 million, which converted into cash is 2.5 billion yuan.

The Economic Power Latent in Barren Mountain Pastures: When we compare Manyang and Luoyang prefectures to Zhoukou and Shangqiu prefectures, the amount of arable land per capita is basically the same, but the former, compared to the latter, have 2 to 4 more mu of pasture per capita; normally, their animal husbandry output value should be somewhat higher, but in fact, it is 18 percent lower than the latter. Of course there are many different reasons, of which the main one is their failure to take advantage of excellent resources. For example, in Tongbai County in Nanyang Prefecture, there are 4 mu of high-quality pasture and almost 3 mu of mountain forest per capita; pastures which have been improved can support 2 sheep per mu, worth about 100 yuan. But in 1984 the per capita animal husbandry output value was only 32 yuan, 30 percent lower than in Zhoukou Prefecture, which has no pasture and grazing slopes. There is much grass but few livestock, so large areas of high-quality pasture are left untouched, an enormous waste of resources. This situation prevails in most of the 60 million mu of pasture in Henan. If 40 million mu of pasture were improved and used, and we add on the several tens of million mu of barren mountain resources, each year 20 million head of commodity sheep could be sold; counting in the wool, fine hair, and leather, we could hope to obtain more than 1.2 billion yuan in cash.

Summerizing the above, and adding on the 4 million commodity sheep and the economically very valuable rabbit and bee products produced annually in flat-land agricultural areas; even if we only figure this income as 600 million yuan, the gross value of the province's annual animal husbandry output could be more than 10 billion yuan, which is 147 yuan per peasant in Henan. After taking out the approximately 30 percent of animal products which peasant households typically need to consume themselves, the surplus cash could completely make up for the 4 billion yuan spent on production material inputs

annually in Henan in recent years; in addition, there would be a cash reserve of 30 yuan for each mu of arable land, which would allow agriculture to increase its vitality.

Losses Caused by Failure To Use Modern S&T Deserve Our Special Attention: For example, 1 jin of urea fed to cattle or sheep has the protein equivalent of 10 jin of cake and meal or 30 to 40 jin of corn kernels; after urea is used to ammoniate straw, 2 jin can be equal to 1 jin of barley. America annually feeds more than 1 million tons of urea to ruminant animals. After this technique is promoted, every year at least more than 1 billion jin of grain fed to cattle could be saved. The protein content of feed for swine and laying hens should be about 12 to 19 percent, but in Henan it is mostly less than 10 percent, so that producing each jin of chicken eggs consumes more than 1 jin of additional grain and producing a 200-jin hog consumes more than 300 jin of additional grain. If arable land needed to plant the high-quality feed for large livestock is planted instead with grass, we could obtain more than twice as much energy matter, 300 to 400 percent more protein, and large amounts of vitamins. This means that if modern S&T are used to change current traditional animal husbandry production practices, the productive force can still increase severalfold.

All of the above formulations can be confirmed by actual cases of production in some parts of Henan. Last year, by just putting animal husbandry onto its agenda, Huaiyang County solved some of the problems of production: although they still adopted traditional production methods, the output value of animal husbandry increased from 39 million yuan in 1984 to 85 million yuan. The average household in Zhuji Township of this county has 1 large animal, 1 pig, 10 rabbits, and other animals and poultry; animal husbandry's share of the gross value of agricultural production is 30.07 percent, the per capita income is 278 yuan. We should say that if something can be done in the densely populated flatland agricultural areas, then it is possible through hard work to do the same in the great majority of places in Henan. If the above formulations are realized, the role and status of animal husbandry in the new agricultural economy of Henan are self-evident.

12919/12948
CSO: 4007/356

HUBEI

FUNDS ALLOCATED FOR POOR MOUNTAINOUS AREAS

Beijing NONGMIN RIBAO in Chinese 22 Jan 86 p 1

[Report by special correspondent Chen Ji [7115 7535]: "Hubei Raises More Than 200 Million Yuan to Support Poor Mountainous Areas: Provincial Party Committee Requires Improvement in Results of Application of Funds, So That One Penny Can Be Used Like Two"]

[Text] In order to strengthen its support for the mountainous areas, Hubei Province has raised 250 million yuan of funds to help the province's 36 counties or cities in mountainous regions to develop their production and escape from poverty and attain prosperity. This measure was determined by the provincial party committee's mountainous areas work conference convened in December 1985.

This sum of funds raised will be used to support the mountainous regions in the following aspects:

-- In the mountainous regions where their financial revenues are not enough to offset expenditures, efforts will be made to allocate in advance about 35 million yuan of financial subsidies so as to support these counties in the development of their economy and realization of their financial self-sufficiency as soon as possible.

-- The provincial government will reduce the taxes in poor agricultural areas by two-thirds. This amounts to 20 million yuan a year (the provincial authorities will assume responsibility for 5 million yuan compared to 1985). Part of the remainder will be made up by taxes levied by counties on retained profits and from revenues collected from households that should be taxed. The policy adopted toward township and town enterprises in the mountainous areas of counties will be "narrow taxation coverage, broad tax exemptions, light tax burdens, and simple taxation procedures." Whereas we now reduce the tax by 11 million yuan a year, we should reduce it further by 10 million a year.

-- Efforts will be made to support the mountainous regions in expanding the acreage of corn planted under plastic film. This will help to basically solve the problem of grain supply in high-altitude, cold mountainous regions. It is determined that the provincial finance department will allocate funds to help the mountainous regions to build a plastic film factory. The provincial

finance department will provide discounts to households having difficulty paying for plastic film.

In addition, the province will assist the masses in reservoir areas in buying food, increase agricultural working funds and loans, and support the development of industrial and commercial enterprises in mountainous areas. The provincial government will also assist in repairing roads in mountainous areas and boost the wages and subsidies of school teachers.

In their speeches, leading members of the provincial party committee emphasized that all counties in mountainous areas (and cities) must pay careful attention to the economic benefits of derived from using funds. Funds from the central government, provinces and those drawn up by the counties (cities) must be used wisely and with good results. One unit of money must be made to serve as two. Where funds are not wisely used, we must investigate and affix blame. When funds are well used we should follow what has been beneficial.

9255

CS0: 4007/281

HUBEI

BRIEFS

GRAIN HARVEST--Based on a survey by the provincial agricultural department, the gross output of summer grain is estimated at 8,260,000 to 9,060,000 tons, an increase of about 4.5 percent over last year. Gross output of wheat is estimated to be 7,130,000 to 8,150,000 tons, an increase of about 6 percent over last year. [Excerpt] [Zhengzhou ZHONGGUO CHENGXIANG XINXIBAO in Chinese 26 Jun 86. p 1]

CSO: 4007/493

JILIN

BRIEFS

NEW RICE HARVESTER--Beijing, 18 Jul (XINHUA)--The drudgery of Chinese peasants in harvesting rice with sickles is expected to be removed soon when a newly-developed rice harvester is put into wide application. Weighing about 2 kilograms and selling at 40 yuan (about 11 U.S. dollars), the man-driven harvester works three to four times faster than a sickle. It can be used in either hilly or plain areas, according to its developer, the Changbai Machinery Factory in northeast China's Jilin Province. The machine proved popular among Chinese peasants when it was put into trial use in the Guangxi Zhuang Autonomous Region and Guangdong Province's Hainan Island, an official from the factory said. China's rice acreage makes up 30 percent of the total grain acreage. [Text] [Beijing XINHUA in English 0619 GMT 18 Jul 86 OW] /6662

CSO: 4020/393

BRIEFS

FEED OUTPUT--From January to April this year, Nei Monggol produced 107,900,000 kilograms of mixed and compound feed, a 34.15 percent increase over the same period last year; 109,300,000 kilograms were sold, an increase of 25.51 percent over the same period last year. Feed enterprises realized more than 4.5 million yuan in profits (including supplementary benefits), an increase of 81.72 percent increase over the same period last year. At present, there are 74 feed mills in the region. [Excerpts] [Beijing ZHONGGUO SHANGYE BAO in Chinese 12 Jun 86 p 1] /8309

CSO: 4007/461

NINGXIA

PROVINCIAL DESERT BECOMES 'LAND OF PROMISE'

OW101314 Beijing XINHUA in English 1133 GMT 10 Jul 86

[Text] Yinchuan, July 10 (by XINHUA correspondent Wu Guoqing)--An uninhabited area in Ningxia Hui Autonomous Regions has become the land of promise for 10,000 immigrants from poor regions, thanks to the joint effort of the United Nations and Chinese Government.

The place is Nanshantaizi, an area of 280 square kilometers in Zhongwei County on the southern edge of Tengger desert, the third largest in China, where the weather is dry and plants could hardly survive.

Between 1967 and 1978, the government built a network of pumping stations designed to divert water from the Yellow River to irrigate 10,000 hectares in the area, believing that with the water, the natural conditions could be changed to allow immigrants to come in.

But only 2,200 hectares were actually developed, as the government lacked funds to build some of the auxiliary facilities.

China's request for aid from U.N. World Food Programme (WFP) was met in 1983. By contract, WFP would offer aid to develop 4,000 hectares of barren land in three years.

It has provided 25,100 tons of wheat and 418 tons of edible oil, worth 6.2 million U.S. dollars and other food, in lieu of payment to peasants involved in the project.

The Chinese Government has invested 9.7 million yuan, as well as labor and construction materials.

Thanks to peasants' enthusiasm to get rid of poverty, and the pay of three kilograms of wheat and 50 grams of cooking oil per work day, the project was completed in October 1985, four months ahead of schedule.

New houses and public buildings now dot the new land, which is crisscrossed by canals and roads. The immigrants have planted trees on 3,280 hectares, in addition to developing 4,000 hectares of arable land.

At the same time, the local government has run training sessions of crop cultivation, forestry and grass planting. Local officials described the 1,260 people so far rotated through such sessions as the backbone in executing the project.

To encourage the peasants in poverty-stricken areas to move to Nanshantaizi, the government offered immigrants land, steel and cement for building houses. New settlers each are allowed to use two mu (15 mu to one hectare) of land for farming and another four mu for tree planting. In the first five years, they can use water from government-built irrigation facilities free of charge, and in the first ten years, exempted from agricultural tax.

Altogether, 2,420 families have settled in the area. All villages have clinics, shops and schools.

"Seeing desert turned into oasis is the best proof that WFP's aid is well used," said Mr Manfred Kulessa, WFP representative in China.

In 1986, the Ningxia Hui autonomous regional government plans to spend another 264,000 yuan on the construction and maintenance of irrigation facilities.

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CSO 4020/390

SHANGHAI

BRIEFS

RURAL SAVINGS--Based on statistics of the Shanghai Agricultural Bank, from January to April saving deposits increased by more than 589 million yuan; total saving deposits reached 2.144 billion yuan. [Excerpt]
[Zhengzhou ZHONGGUO CHENGXIANG XINXI BAO in Chinese 19 Jun 86 p 3]

CSO: 4007/486

EROSION CONTROLLED ON LOESS PLATEAU

OW181412 Beijing XINHUA in English 1340 GMT 18 Jul 86

[Text] Taiyuan, July 18 (XINHUA)--Filling gullies to grow grass and trees is one way to control the severe soil erosion on the loess plateau, Sun Jianxuan, director of the provincial water conservancy bureau, said here today.

Sun Jianxuan said about 700,000 peasants families, or one-fifth of the total in the mountain areas, have contracted for one-third of the soil-eroded areas in Shanxi Province since 1982, when the new policy of encouraging rural prosperity began.

They have built dams to contain water, so that topsoil can be washed down to fill low-lying areas, and built terraced fields.

As a result, each year since 1982, 3.5 percent of the soil-eroded land on the loess plateau has been improved. Last year, peasant income totalled 355 yuan per person compared with 227 yuan per person in 1982.

Over 80 million people live on the loess plateau, which stretches 700,000 square kilometers through Shanxi, Shaanxi, Gansu, Qinghai and Henan provinces and the Inner Mongolia and Ningxia Hui autonomous regions.

The alternating droughts and floods have caused 80 percent of the plateau to become gullies. During the rainy season, floods pour down from the gullies to destroy the farmland and bring large amounts of mud and sand into the Yellow River.

The Chinese Government started to tackle the soil erosion problem on the plateau in the 1950's.

The director noted that Shanxi's experience in improving the eroded soil on the loess plateau is being introduced to the other provinces and regions on the plateau.

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CSO: 4020/393

SHANXI

SHORTAGE OF EDIBLE OIL, POTENTIAL FOR PRODUCTION EXAMINED

Taiyuan SHANXI NONGMIN in Chinese 21 Jan 86 p 2

[Article: "Gap in Supply of Edible Oil Too Great in Our Province; Great Potential for Edible Oil Production"]

[Text] Shanxi has long been unable to satisfy its demand for edible oil and has relied on the state to bring in and maintain its supply. Over the past few years, the demand for edible oils has increased along with improvement in the living standards of the masses and the flourishing development of a service industry in food and beverages. The national supply of edible oil has tended to be tight and Shanxi's infusions of oil have correspondingly dropped. The province's annual requirement of edible oil is 100 million jin but only 50 million jin can be supplied internally. In 1983, the state transferred 50 million jin into our province. In 1984, the amount of oil transferred in was reduced to some 10 million. This resulted in critical shortages of edible oil in both our urban and rural areas last year. Also, last year the province's cotton planting acreage was greatly reduced, leading to a serious lack of sufficient raw materials for making healthy edible oil; in not a few places the planting of oil-rich small-size sunflowers was changed into the planting of big-size sunflowers whose seeds are mainly intended as snacks after baking. In places like Yanbei and Xinzhou, which suffered drought, the planting of hemp was greatly reduced in acreage. With all of the above causes converging together, raw materials for oil in our province thus seriously fell short. According to concerned circles, the province's amount of planned purchase of edible oil last year was 51 million jin, but up to early January this year only 33,670,000 jin were fulfilled, which make up only 66 percent of the planned target. It is predicted that the contradiction between supply and demand in edible oil in our province still cannot be alleviated this year.

Ours is a province with a vast area and agreeable climate; there are considerable conditions for developing oil crops, such as the hemp and sunflowers in the western regions of Yanbei and Xinzhou prefectures and beans in the Luliang region. Besides, there are also definite conditions in the plain regions of Yuncheng, Jingcheng, Lingfen, and Jinzhong for the cultivation of rape. All areas should adapt measures to suit their local conditions and lose no time in planting these crops.

9255

CSO: 4007/281

GRAIN PRODUCTION BASES PLANNED, CONTRACTED

HK160813 Taiyuan SHANXI RIBAO in Chinese 30 Jun 86 p 1

[Report by Xu Jing [6079 7231] and Ding Weiyue [0002 0251 6460]: "Provincial Government Signs Contracts with 18 Counties (Cities) as Commodity Production Bases"]

[Text] On the afternoon of 28 June, the provincial government asked the provincial department of agriculture and animal husbandry and the provincial grain bureau to sign contracts for the construction of commodity grain production bases with Linyi County, Xiangfen County and 16 other counties (cities) and their administrative offices in Taiyuan. Guo Yuhuai, vice governor of Shanxi Province, attended and delivered a speech at the signing ceremony.

In order to develop the grain production of our province, the central authorities have decided to take 24 million yuan from the increased part of the income, industrial, and commercial taxes turned over to the state by township and town enterprises to support the development of our province's agricultural production. The funds allocated by the central authorities finance accounts for 40 percent while the funds arranged by local finance accounts for 60 percent of the total funds. This policy will remain unchanged in principle for 5 years. Since the development of our province's wheat production is very slow, the provincial government has decided to use the funds to support wheat production in the first 3 years. The provincial government has decided to let these counties (cities) become commodity grain production bases according to their advantages in natural resources and their potential in the development of wheat production.

The contracts clearly stipulate that the subsidiary funds received by the counties (cities) which are designated as commodity grain production bases should be spent on construction of small-sized water conservancy works; transformation of medium-yield and low-yield fields; popularization of advanced technology; breeding and popularization of the fine varieties of wheat; prevention and control of plant diseases and elimination of pests and rats; and on other key links in the development of grain production. They should not be diverted to any other purpose on any excuse. When using the funds, the method of giving subsidies gratis and the method of

offering funds for circulation use on a compensation basis should be jointly implemented. Funds for circulation use should be provided on a compensation basis to support the production measures in a certain year, so as to enable the funds to become circulation funds which can be used repeatedly in the development of grain production. The contracts also stipulate the specific contents of the service of the first party; the specific annual increase rates of wheat production yields of the counties (cities) designated as commodity grain production bases; and the specific amount of wheat the counties (cities) designated as the commodity grain production bases should sell to the state after these counties (cities) have received the subsidies.

In his speech, Guo Yuhuai stressed that the counties (cities) designated as the commodity grain production bases must formulate strict administrative methods, establish economic responsibility systems, make good use of the funds, strengthen the supervision and examination of the situation concerning the use of the funds, and practically increase the rate of funds utilization. The investment in the construction of water conservancy works should not be less than half of the total amount of investment and should concentrate on the construction and recovery of small-sized water conservancy works, complete with supporting facilities, and on economizing the use of water resources.

The 18 counties (cities) are: Yongji County, Ruicheng County, Linyi County, Wanrong County, Xinjiang County, Jishan County, Wenxi County, Xiaxian County, Pinglu County, Jiangxian County, Quwo County, Yicheng County, Hongdong County, Xiangfen County, Tianzhen County, Tunliu County, Yuncheng City and Linfen City. Tunliu County has been designated as an experimental point for autumn grain.

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CSO: 4007/471

HIGH-YIELD TIMBER PRODUCTION BASES PLANNED

Beijing JINGJI RIBAO in Chinese 28 Jan 86 p 2

[Report by Long Chun [7893 2504]: "Sichuan Province Accelerates Development of Fast-growing, High-Yield Timber Bases and Actively Plans the Building of Forest Conservation Projects in the Changjiang's Upper Reaches"]

[Text] Since 1981, Sichuan Province has accelerated the development of fast-growing, high-yield timber bases in its basins and mountainous areas. In five years time, the province had altogether constructed more than 4.7 million mu of fast-growing, high-yield forests. Of this, 130,000 mu were built with the aid of the World Food Program and more than 20,000 mu were jointly run in cooperation with the Ministry of Forestry as experimental projects. The species of trees planted were mainly China fir, masson pine, and fine varieties of foreign pines.

The cultivation of fast-growing, high-yield forests in basins and in mountain areas is an important policy in the revitalization of Sichuan's agriculture. For one thing, this policy will allow the full exploitation of the natural resources and economic potential of the basin and mountain regions and accelerate the renewal of forests after cultivation. The policy will gradually solve the problem of concentrated and excessive felling of the virgin forests of western Sichuan. For another, the policy will improve the ecological environment of the interior of the basins..

The majority of the tree farms are run by individual and collective households, with the exception of a portion which is run by the state. Tree farms run by collectives are of two types: One type is a village cooperative forestry centers, with part of these centers experimenting the method of share-holding joint management; the other is a tree farm contracted to a specialized household or specialized households.

In order to support such timber base building, the province has practiced the method of providing a subsidy of 15 yuan per mu and also arranged 200 million jin of foodgrains to be used in subsidizing forestry cultivation.

During the Seventh 5-Year Plan period, the province will continue to cultivate 1 million mu each year of fast-growing, high yield timber forests and build by 1990 a new commercial timber production base of 10 million mu. After these woods are grown after 20 years, the timber production base of Sichuan Province will be expanded from its western virgin forests to its interior.

SICHUAN

BRIEFS

WHEAT OUTPUT--Based on the preliminary statistics of revelant departments, the gross output of wheat this year in Sichuan will be more than 13.1 billion jin, an increase of 600 million jin over last year. Although there was a slight decrease in the area sown to wheat this year, the area sown to improved varieties of wheat was more than 15,000 mu [as printed 15 million ?], an increase of nearly 300 percent over last year. [Excerpts] [Chengdu SICHUAN RIBAO in Chinese 26 Jun 86 p 1] /8309

CSO: 4007/461

ARTICLE URGES DIVERSIFICATION OF RURAL ECONOMY

Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese
No 2, 23 Feb 86 pp 37-39

[Article by Tian Yuanjun [3944 0955 0193], Li Jiachen [2621 0163 6591], and Liu Yanqun [0491 1750 5028], of the staff of the Xinjiang Soil Management Agricultural District Planning Bureau and the Xinjiang Planning Council: "Exploit Regional Assets, Speed the Development of Xinjiang"]

[Text] I. Xinjiang's Special Characteristics, Positive Features, and Existing Problems

Xinjiang is situated at the center of the Eurasian continent. To its north are the Altay Shan, and to the south, the Kunlun Shan. Spanning the Tian Shan, it has the semiclosed and fully closed Junggar Pendi and Tarim Pendi. The basins are extremely dry. Annual rainfall generally is less than 100 mm. These are dry farmlands. In the mountain districts, there is relatively more rainfall and richer vegetation. In the high mountain districts, there are glaciers which are the source of long river systems. Within the basins, rivers are in the centers and provide oases. These special features of the ecological environment are advantageous to the development of Xinjiang's agriculture. For example, there are rich supplies of sunlight and soil resources. There are over 100 million mu of first- and second-class arable land that is untilled, which is more than 20 percent of the national total. There are also 760 million mu which are suitable for grazing, which is 23 percent of the national total. There is also tremendous potential in water and hydropower resources. Within Xinjiang, 79.3 billion cubic meters of surface water flow each year (and 9.1 billion cubic meters flow to foreign countries). There is little variation from year to year. There are also 4.9 billion cubic meters of groundwater. The combined total of water resources is 84.2 billion cubic meters. The per capita average is 6,300 cubic meters, which is 1.3-fold higher than the national average. These favorable conditions clearly provide Xinjiang's livestock, fruit, cotton, and other cash crops with economic advantages in the provinces, municipalities, and autonomous regions.

There are also some negative factors affecting the development of Xinjiang's agricultural production. The principal ones are as follows: 1) The desert ecosystem is fragile; one-third of it is occupied by natural

grasslands that lack water. Because of overgrazing, grass production per mou has declined 20 to 40 percent from the past. At present, there are serious shortages of fodder in the late winter. 2) It is dry during the spring, and salinization and sandstorms are serious problems. There are wide fluctuations in river flow from season to season. During the spring in normal years, there is a shortage of 4 billion cubic meters of water and during the spring drought, 10 million mu are affected, which is almost one-fourth the total area planted during the entire year. There are 16 million mu of saline soil, which is one-third of the total area planted. 3) Places are scattered, and communications and transport inside and outside the region are difficult. 4) The level of scientific knowledge among farmers and herders is low and the technical standards of villages and local farms, ranches, and forests are backward. 5) Poverty. Local finances are limited, and funds for development are insufficient.

II. Keeping Balance in Small Districts Insures that Xinjiang Will Be Self-Sufficient in Grain

Grain is the basics of the national economy. It also is the basis for the expansion of the agricultural economy. In Xinjiang, per capita grain consumption is 746 jin, which is lower than the national average. With the opening of the region, the population, especially the nonagricultural population, will increase at a comparatively fast rate. In the future, there must be a steady increase in grain production. By the year 2000, per capita consumption will exceed 800 jin.

For distribution in the region, a balance between production and consumption should be maintained in small districts. Oasis agriculture is a special characteristic of Xinjiang. Using the oasis as the district unit, it should be a relatively independent economic district. Every oasis is a place where people and industry, agriculture and commerce are concentrated. The oases are generally far apart from one another. There is a folk saying, "Grain is not shipped 1,000 li." Moving large amounts of grain between oases is costly. Therefore, each oasis should be self-sufficient in grain or basically self-sufficient. That is to say, grain production in the small districts should be promoted, with the primary goal being to have production balanced with consumption. "Balances in small districts" refers to each oasis and each area being internally in balance. It is clear that with effort most places can meet this goal. At the same time that balances are sought in small districts, there should also be appropriate development of a few areas producing commodity grain for the region. This is to meet the grain needs of cities with nonfarming populations and areas which are engaged in producing special cash crops. It also is to support individual herding areas.

III. Actively Adjust the Composition of Production, Expand Commodity Production

At the same time that work continues in doing well in grain production, new demands inside and outside the region, including the international market, should be addressed. Beginning by increasing the "Three benefits," the

region's special advantages should be further exploited. Strategic adjustments should be made in the composition of Xinjiang's agricultural production. Commodity production and tertiary production should be greatly expanded.

1. Focus should be on adjusting the key points in the composition of agricultural production. Animal husbandry should be vigorously expanded. Xinjiang should strive to become one of China's principal producers of animal products. Xinjiang is China's second large grasslands area, yet its animal husbandry clearly is not what it should be. From 1979 to 1984, the value of animal husbandry production increased 52.7 percent, which is considerably less than the 71.8 percent increase in the value of agricultural production. Leadership should be strengthened. Advantageous factors should be exploited. Appropriate measures should be taken to speed the development of animal husbandry. It is estimated that by the end of this century, the amount of livestock on hand will increase from 30.25 million head in 1984 to 41 million head. If grain production can increase similarly, then animal products can increasingly serve as raw materials for light industry.

2. Production of famous products should be expanded. Xinjiang should become a major producer of fruits for China. With the rise in living standards, demand will steadily grow inside and outside Xinjiang for its famous Hami melon, grapes, pears and even tomato ketchup. The area planted in fruits should increase from the 940,000 mu in 1984 to 3 million mu (including 1.5 million mu planted in grapes) by the end of this century. Total production should be 2.25 million tons, 5.6-fold more than production in 1984.

3. By first improving the quality of products, Xinjiang should become a major producer of high-quality cotton for China. In 1984, Xinjiang produced 3,846,000 dan of cotton. In 1985, production is estimated to have been 4.2 million dan. At the end of this century, the area planted in cotton should increase to 6 million mu, and total production, to 8.5 million dan.

4. Forests should be rapidly expanded, which would greatly improve the ecological environment for agriculture. Xinjiang has a model desert ecology. Forests have an especially important function, but at present are not what they should be. Between 1950 and 1984, 6.77 million mu were planted in trees, but only 59 percent of the trees survived. The area of successful afforestation still is smaller than that of deforestation and destruction. Already 3.4 million mu of natural poplars have been destroyed within the region. Only 1.03 percent of Xinjiang has forest cover, which is fourth from last in the country. Forestry should be accorded strategic importance. Efforts should be made to increase forest cover to 1.6 percent by the end of the century.

5. Township and town enterprises should be expanded in various ways, helping the rural economy. The rate of expansion of township and town enterprises, especially township and town industries, directly affects the

prosperity and modernization of the rural economy. In 1984, the total income of Xinjiang's township and town enterprises was 630 million yuan, which is only 0.37 percent of the national total. Nationally, the value of production of village industries is 16.6 percent of the total value of agricultural production, but in Xinjiang it is only 3.3 percent. At the end of 1984, there were still 20 townships and 2,779 towns that still lacked township or town enterprises.

The value of production of Xinjiang's animal husbandry and fruit industries will increase rapidly. Grain, cotton, edible oils, beets, and other agricultural and sideline products will increase. Coal, iron, petroleum, nonferrous metals, and other resources are abundant. We should work hard to rapidly expand rural enterprises. First, processing industries for agricultural products, especially for animal products and melons, fruits, and tomatoes, should be expanded. They should be able to fully utilize the fruits and animal blood, bones, entrails, and milk that at present are thrown out, or rot, or are wasted in large quantities. The processing industries should render these things small (in volume), light (in weight), expensive (in price), and high (in quality), making it convenient to store or ship them. New markets can also be found, thus greatly helping increase the value of agricultural products. At the same time, there should be expansion of construction, construction materials, mining, transport, beverage services, commerce, and other lines. In the year 2000, the value of production by township and town enterprises should reach 4.5 million yuan, more than trebling that of 1980.

Animal husbandry, fruit growing, large-scale grain and cotton farming, and township and town enterprises will become, with adjustments, the four main pillars of the rural economy. At the end of this century, the total value of production in rural society will double that of 1980. Per capita rural income will increase from 363 yuan in 1984 to more than 700 yuan.

IV. Principal Steps for Expanding the Rural Economy of Xinjiang

1. Work hard on water conservancy projects. Xinjiang is an arid region. Water conservancy has a particularly important role to play. Therefore, step 1 should be improving management standards, including comprehensive setting of water quotas, collecting water fees, and appropriately raising the fees. Total control of the "two waters" helps accelerate the utilization of groundwater resources. Step 2 is doing the "Five good's" rural construction projects, which center on supplemental and water conservancy projects. Xinjiang soil has a high sand content. When canals carry water, there are serious losses from seepage. In addition, there is much evaporation. The utilization coefficient for all of Xinjiang's canals is only 0.36. Leak-prevention work on canals could reduce water losses of 100,000 cubic meters per km, generally speaking. However, only 10 percent of canals at present have had leak-prevention work done. By the end of the century, leak-prevention work should be extended to 85 percent. Irrigated agriculture demands a great deal of the soil. At present, only 8 million mu in Xinjiang meet the standards for irrigated districts of the "Five good's" (good fields, canals, forest belts, roads, and residences).

Based on the experiences of the pioneering districts, if the standards are extended to another 30 million mu, then the irrigated area can be expanded by 3 million mu, thus saving 4.5 billion meters of water. Step 3 is comprehensive planning and building large-scale water reservoirs in the hill districts. Large-scale collection of water will solve the problem of spring drought and is needed for continued expansion of irrigation.

2. Forests should be protected and expanded. state control over forests should be relaxed, and a system of individual, collective, and state management should be implemented. Individuals should be permitted, on vacant hills and spots, to plant trees for making charcoal. There should be active support of "dual households" engaged in forestry who are creating pioneering forests. Poplar forests, which are not easily managed by the state, and river valley secondary forests should be placed in the managing hands of neighboring villages, state farms, and even individual households. Collective- and state-operated forests should implement contract responsibility systems. In the mountain districts, the main function of forests is to conserve water. In the central and eastern portions of the Tian Shan, the forest areas have been overcut. The mountains should be closed off and trees planted, transforming the slashed land as soon as possible. In the course of exploiting the forest districts in the western portion of the Tian Shan and in the Ale Shan, the rate of cutting should not exceed the rate of growth. Cutting and growth should be balanced. The natural forests on the plains and deserts are essential to Xinjiang's special dry desert ecology. To help them recover their vitality, there should be total or piecemeal closings, depending on circumstances. In addition, floodwaters should be used for irrigation. In model forest districts, natural environment protection districts can be established. Speeding the planting of artificial forests is a strategically important program for the expansion of Xinjiang's forests. In the long view, it can reduce the pressure to cut trees in the mountain districts. North and south Xinjing should each be made basically self-sufficient in wood supplies. Afforestation on the plains should be directed by a comprehensive plan, according to local circumstances. Planting trees to protect fields is the primary policy. Trees for firewood and cash sale are secondary. Following the oases in 84 counties and municipalities that are in the "three north" forest protection plan, belts of trees and grass should be planted that combine strips of networks of trees, irrigation, and grass to serve as windbreaks and soil conservers. It should accompany the rural "Five good's" construction. During the Seventh 5-Year Plan, fundamental implementation of an agriculture-forestry network for all of Xinjiang should be a high priority.

3. The "three fertilizers" should be promoted, and fertilizer should be applied scientifically. For enriching soil nutrients and expanding agriculture and animal husbandry, first, the planting of alfalfa as a green fertilizer should be rapidly expanded. By the end of this century, it should occupy over 20 percent to 40 percent. Third, self-produced nitrogenous fertilizer can basically meet demand, but there should be greater allocation and purchases of phosphate and compound fertilizers. At the same time, application methods should be improved. Broadcast application should be replaced by deep application. Basic fertilizer should

be reapplied, and seed manure should be widely applied. Topdressing should be applied in accordance with the growing needs of plants and at appropriate times and in appropriate amounts. This will greatly increase the efficiency of the fertilizer.

4. The area planted and irrigated should be appropriately expanded, primarily by utilizing unrealized potential. Xinjiang has extensive agriculture. Not only is grain yield about 25 percent lower than the national average, there also are more than 6 million mu of land, over 13 percent of arable land, that is idle or goes unharvested. Clearly, there is tremendous potential here! Primarily using unrealized potential, by the end of this century crop yields should be significantly raised and existing land more fully utilized. At the same time, the area irrigated should be expanded 15 million mu and planted primarily in grass and trees.

5. Fodder production should be increased. Natural grasslands should be protected and improved, helping improve the production factors for animal husbandry. Fodder is the foundation for expanding animal husbandry. At present, Xinjiang annually lacks about one-third of the needed fodder. There also is a serious shortage of protein-rich grasses. To prepare for the end of this century, the area planted in alfalfa should increase from 2.03 million mu in 1984 to 7 million mu. The area planted in green manure should increase from 1.46 million mu to 8 million mu. In addition, half of the green manure should be used as livestock feed and 1.5 million mu of fields should be set aside for raising beets and green grasses by intercropping and interplanting. To meet the demand for material needed for the expansion of animal husbandry, the production of corn should be increased from 2.79 billion jin in 1984 to 4.8 billion jin. Natural grasslands should be contracted out, at the same pace as livestock, to herding households or household groups. To insure protection and improvement, rotation grazing from district to district should be practiced.

6. There should be extension and expansion of advanced science and technology. At present, to respond to the need to extend the results of advanced technical and scientific research, there are the following: improved seed varieties, use of plastic film in cultivation, microsprayers, cultivation through aerial systems, artificial insemination using frozen semen, mechanized shearing, breeding in herding districts and fattening in agricultural districts, and slaughtering within the same year sheep wethers that are born in the early spring.

7. Township enterprises should be expanded through self-reliance and increased support from more quarters. Operations should take different forms, with collective, joined households, and individuals all participating. All pertinent quarters in Xinjiang should provide active support. All unreasonable restrictions and obstacles should be removed. The state should help provide support in the forms of funds, personnel, tax revenues, and loans. Urban industry should follow the "Bai Lan" line, widely sharing a portion of its products and miscellaneous production pieces with rural enterprises. Urban-rural cooperation will bring prosperity for both.

8. Policies should be further liberalized. Information systems should be improved. Communications and transport should be expanded. As a region that "has many national minorities, is on the border, and is poor," Xinjiang should liberalize the rural economic policies even more than places in the interior, such as policies concerning intellectuals, and the purchase and sale of animal products, and mining by peasants and herders, and relations with the outside. The rail link between Urumqi and the Soviet Union should be completed as soon as possible. Highways should be extended. Information systems should be improved. There should be large-scale collection and timely communication of economic news. Leadership and coordination should be improved, insuring the wise structuring of rural commodity production and proper fit between supply and demand. In addition, to increase available funds, funds should be raised internally, the party central should provide assistance, and there should be greater savings and wise utilization.

12994/9190
CSO: 4006/403

ECONOMIC DEVELOPMENT IN RURAL AREAS SUBJECT OF CONFERENCE

Conference Hears Report

HK010427 Urumqi Xinjiang Regional Service in Mandarin 1200 GMT 29 Jul 86

[Text] At the conference on speeding up the development of the economic work of the northern Xinjiang pastoral areas, on behalf of the regional CPC Committee and People's Government, Tomur Dawamat made an important report: "Enhance Understanding, Carry Out Reform In Depth, and Push the Economic Development of Our Region's Pastoral Areas to a New Stage."

In dealing with the initially prosperous economic situation of our region's pastoral areas, which began to emerge during the Sixth 5-Year Plan period, and with the foregone conclusion that northern Xinjiang had bumper production in animal husbandry in the first half of this year, Tomur Dawamat said: Due to reasons of history and natural conditions, the speed of development of our region's animal husbandry is not sufficient and does not suit the development of the national economy. Therefore, speeding up the development of animal husbandry, invigorating the economy of the pastoral areas, and enabling the herdsmen of all nationalities to get rich as soon as possible is an extremely important and urgent task confronting CPC Committees and people's governments at all levels.

In his report, after putting forward the whole region's general target of struggle in animal husbandry during the Seventh 5-Year Plan period, he emphatically pointed out: To achieve this target, we must fully understand the important position of animal husbandry in our region's national economy. He said: Animal husbandry is an important economic pillar of our region. Only by greatly developing animal husbandry and livestock products [passage indistinct]. It is not only an economic matter but also an important political matter. The majority of the pastoral areas are in the border counties and are the places where minority nationalities live in compact communities. Only by speeding up the development of animal husbandry can we realize the stability and unity of our region and the real egalitarianism of the people of all nationalities and make the border defense of our motherland more consolidated. Therefore, CPC Committees and people's governments at all levels must mobilize all forces, [words indistinct], unite to work hard, do work well in a down-to-earth manner, and strive to make a breakthrough in the development of our region's animal husbandry in 3 to 5 years.

In his report, he dealt with eight views on speeding up the economic development of our region.

Conference Concludes

HK010227 Urumqi Xinjiang Regional Service in Mandarin 0000 GMT 1 Aug 86

[Summary from poor reception] The conference on speeding up economic construction in the pastoral areas of northern Xinjiang concluded in Altay on 31 July. The meeting decided that the basic guideline for speeding up the region's animal husbandry economy is to closely integrate animal husbandry in pastoral, agricultural, and suburban areas.

The meeting put forward the goals of endeavor for economic development in animal husbandry during the Seventh 5-Year Plan. Total output value of animal husbandry during the plan period should reach 1.4 billion yuan, a rise of 61.5 percent compared with the Sixth 5-Year Plan and representing 22 percent of total agricultural output value. Meat production should reach 300,000 tons, a rise of 58.7 percent compared with the Sixth 5-Year Plan. Wool production should reach 50,000 tons, a rise of 27.9 percent. Milk production should reach 500,000 tons, an increase of 66.7 percent. The total number of livestock should reach (?34) million, a rise of 12.7 percent."

The conference called on the region to attach importance to animal husbandry, work hard to implement various reforms, and promote scientific management. The pastoral areas should go in for diversification, develop lateral economic ties, build permanent animal husbandry production bases, and practice intensive production, thus advancing from traditional animal husbandry to large-scale commodity production.

The regional authorities have decided to increase investment in the pastoral areas during the Seventh 5-Year Plan in order to improve their production conditions. In addition to the investment originally arranged for the period of the plan, a further 240 million yuan will be spent on water conservancy and other construction items in the pastoral areas.

The meeting was attended by Wang Enmao, Song Hanliang, and other regional leaders.

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CSO: 4007/484

CONFERENCE ON OVERCOMING NATURAL DISASTERS IN AGRICULTURE

HK291019 Kunming Yunnan Provincial Service in Mandarin 2200 GMT 28 Jul 86

[Excerpts] On the evening of 28 July, the provincial people's government held a telephone conference, at which Vice Governor Li Zhengyou made a speech on making emergency efforts to overcome natural disasters and reap bumper harvests. In the speech, he proposed seven measures for overcoming the current natural disasters and striving to reap bumper harvests.

Vice Governor Li Zhengyou said: This year, the province has experienced abnormal weather, so that there have been successive natural disasters. According to incomplete statistics, 71 counties in the province have been affected in varying degrees by floods and waterlogging. Over 1 million mu of crops were damaged. More than 3,000 houses collapsed, as did thousands of dikes. Bridges, culverts, reservoirs and highways were also damaged. Both state property and people's lives and property suffered heavy losses.

After citing some localities seriously affected by the natural disasters, Vice Governor Li said: On the one hand, the province had so much rainfall that there were floods; and on the other, water storage volume in the province's reservoirs dropped. Compared to the same period last year, the province's water storage volume is 700 million cubic meters less. Though the rainy season started a long time ago, we have only been able to get 37 percent of this year's planned quota for our water storage volume. If we do not handle this work well, we shall have difficulties in next year's industrial and agricultural production. At present, the province is in the period in which the intermediate rice produces fruiting ears on large scale. It is also a crucial period in which the spring crops produce fruits. In order to strive for bumper harvests this year, various localities must further do well in the following tasks:

First, various localities must really do well in flood prevention and the provision of relief materials.

Second, they must really do well in discharging floods. Particularly this year, when we are having abnormal weather, we must promptly take flood prevention or discharge measures in accordance with projects' safety measures and amounts of rainfall.

Third, they must do well in taking preventive measures against mud-rock flow and mudslides. Recently, the departments concerned reported that there have been more than 800 incidents of mud-rock flow and mudslides throughout the province, causing damages to crops on over 650,000 mu.

Fourth, they must do well in prevention and cure of rice blast. Various localities must ensure prompt supplying of farm chemicals.

Fifth, the commercial as well as goods and materials departments must give priority to the supply of materials for fighting natural disasters.

Sixth, they should continue to do well in the relief work and make arrangements for people's livelihood.

Seventh, governments at all levels must strengthen their leadership over the work of preventing and fighting natural disasters.

The provincial government believed that so long as we mobilize all people throughout the province, we will certainly defeat all natural disasters, reap bumper harvests, and increase industrial output.

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CSO: 4007/482

ZHEJIANG

BRIEFS

RICE FARMING--Hangzhou, 20 Jul (XINHUA)--The 15.58 million mu of early rice in Zhejiang Province is in very good growing condition, and the total output is estimated at 6.29 billion kilograms, surpassing last year's record by some 35 million kilograms. Now harvest work has begun in the southern part of the province. The province plans to grow some 20 million mu of late rice this year. In most areas, the task of late-rice sowing will be completed in the near future. Meanwhile, Zhejiang has put into effect a policy of agriculture subsidized by industry. This year, the amount of subsidy given by village and town enterprises to support agriculture has exceeded 200 million yuan.
[Summary] [Beijing XINHUA Domestic Service in Chinese 0706 GMT 20 Jul 86 OW]
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CSO: 4007/482

Agricultural Science

THE GENERAL CONDITIONS AND PROSPECT OF THE FEED YEAST INDUSTRY

Nanjing NANJING LINXUEYUAN XUEBAO [JOURNAL OF NANJING INSTITUTE OF FORESTRY]
in Chinese No 1, Mar 86 pp 123-129

[English abstract of article by Wang Chuanhuai [3769 0278 2849] of the
Department of Chemical Processing of Forest Products]

[Text] This paper is a quite extensive introduction of feed yeast industry, in which the nutritional value and importance of developing products of feed yeast were presented. The nutritional value of feed yeast is no lower than that of fish powder. From a longterm point of view, it is to pay great emphasis on developing feed yeast industry that is the effective way to solve the problem of feed protein shortage in our country.

Some proposals for producing feed yeast by making full use of agricultural-forest cellulosic wastes and organic waste liquor were offered as well.

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CSO: 4011/42

Agricultural Technology

DEPOSIT RATES OF SPRAY DROPLETS EMITTED FROM CURRENT SPRAYERS ADOPTED IN PADDY AREA

Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLLACICA SINICA] in Chinese No 1, Mar 86 pp 63-64

[English abstract of article by Tu Yuqin [1458 0056 2953] of the Institute of Plant Protection, CAAS]

[Text] Deposit rates of droplets emitted from current sprayers generally adopted by paddy farmers were determined and compared with those emitted from some improved spray systems. Hand-operated high volume sprayer, the knapsack sprayer, offered relatively high deposit rate (ml/cm^2) but low recovery rate, while low volume spray system produced lower deposit rate but higher recovery rate. The so-called raining spray (i.e., sprayer operated with its nozzle taken off) and a simple hand-operated giant (liquid sprayed out with a simple pistol directly through a slit extensively adopted by farmers in eastern and southern China) showed much less recovery rate due to rough and big droplets. It has been proved that about 30-40 percent of deposit rate increase could be achieved with conventional spray systems if wetting and spreading agent was used. Increase of application rate could not increase deposit rate if wetting agent was absent.

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CSO: 4011/53

CLONING OF THE P7.5 PROMOTER FROM VACCINIA VIRUS

Shanghai SHENGWUHUAXUE YU SHENGWUWULI XUEBAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Jan 86 pp 78-79

[English abstract of article by Feng Zongming [7458 1350 6900], Wu Xiangfu [0702 4382 3940], Wang Yuan [3076 0997], Chu Meijin [0328 5019 3866], and Li Zaiping [2621 6528 1627] of the Shanghai Institute of Biochemistry, Academia Sinica]

[Text] The P7.5 promoter containing DNA fragment had been isolated from the genomic DNA of vaccinia virus, strain WR and cloned into pBR322. The results of restriction mapping, Southern hybridization with appropriate probes and a part of the sequence were reported. Among the 142 nucleotides analyzed there was one nucleotide difference occurring between the TATA box and ATG initiation codon, when compared with the results of Venkatesan. The P7.5 promoter was known to be quite effective. It may be quite useful for the expression of foreign genes in the vaccinia virus.

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CSO: 4011/57

Biological Control

APPLICATION OF GELATIN MICROCAPSULES OF INSECTICIDES

Tianjin ZHIWU BAOHU [PLANT PROTECTION] in Chinese No 1, 8 Feb 86 pp 35-36

[Article by Zhang Yuwen [1728 3768 2429], Li Zhaocheng [2621 2600 2052] and Sun Kexue [1327 0344 1331] of Dengta County Plant Protection Stations, Liaoning Province; and Xu Yikai [1776 0076 7030] of Danzhuangzi Xiang Agricultural Technique Promotion Station, Dengta County]

[Abstract] To find appropriate insecticides other than those with high toxic and persistent toxic residues, field insecticide tests were conducted in 1984 on the prevention and elimination of underground maggots mainly with gelatin microcapsules of para-sulfur phosphorus and octyl-sulfur phosphorus. In 1985, a large area test of 140,000 mu was involved in a demonstration of maggot and caterpillar control. The gelatin microcapsules are quite safe to man and animals. As measured by the Shenyang Chemical Engineering Institute and Hygiene Institute of Chinese Academy of Medical Sciences, for oral administration of para-sulfur phosphorus by guinea pigs, the lethal dose with 50-percent fatality (LD_{50}) is 68.1 mg/kg, while LD_{50} transcutaneously is 1,103 mg/kg, becoming intermediately toxic (contrasting with high toxicity via oral administration). For octyl-sulfur phosphorus capsules, oral-administration acute toxicity is three times lower than its emulsion form. The LD_{50} of guinea pigs is 4,600 mg/kg transcutaneously; this has low toxicity. Based on the above-mentioned test results, the authors propose large-area testing and promotion for 25-percent strength para- and octyl-sulfur phosphorus microcapsules. One table lists data from field tests.

10424/6662

CSO: 4011/33

STUDIES ON THE NEW STRAIN OF BACILLUS THURINGIENSIS VAR. KURSTAKI 8010

Fuzhou FUJIAN NONGXUEYUAN XUEBAO [JOURNAL OF FUJIAN AGRICULTURAL COLLEGE] in Chinese No 1, Mar 86 pp 1-10

[English abstract of article by Gao Rixia [7559 2480 7209], Lin Guoxian [2651 0948 2009], Guan Xiong [7070 7160], and Luo Yangfen [5012 0111 1164] of the Dept. of Plant Protection, FAC]

[Text] The *Bacillus thuringiensis* var. *kurstaki* (Chinese strain) was successfully isolated from the dead larvae of *Papilio polytes* L. on October, 1980, and was designated as 8010. Its serotype, exterase pattern belonged to H_{3a3b}, and galleriae respectively. Its morphological and cultural characteristics, test of pathogenicity, industrial productivity, and field control were here described. The experiments showed that this microbic insecticide 8010 was so far the most effective. It has no environmental pollution. It is quick in action and covered a wide spectrum, highly fatal to insects such as *Papilio xuthus* L., citrus leaf roller, cabbage worm (*Pieris rapae* L.) and *Plutella xylostella* L.

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CSO: 4011/52

Biological Research

AN INVESTIGATION ON THE HSIEN RICE SEEDLING WITH GROWTH HORMONES TO INCREASE THE INDUCTION RATE OF ANTHER CULTURE

Fuzhou FUJIAN NONGXUEYUAN XUEBAO [JOURNAL OF FUJIAN AGRICULTURAL COLLEGE] in Chinese No 1, Mar 86 pp 45-50

[English abstract of article by Cheng Qinglian [4453 1987 5571] and Zhou Xiongtao [0719 7160 7290] of the Det. of Agronomy, FAC]

[Text] Young panicles of Hsien rice of cvs. Jinwan no. 3 and Jaya/233 F₆ at the meiotic stages were treated with GA₃ 10, 15 and 20 ppm, and ethrel (CPA) 600, 1000 and 1400 ppm. Another set of experiment was pretreated with cold temperature 16 days after spraying treatments with GA₃ and CPA. The result shows that, cold pretreatment together with spraying GA₃ 10 ppm and CPA 600 ppm promoted the induction rate of anther cultured to green plantlets in a great range. cv. Jinwan no. 3 gained higher rate of green plantlets through the promotion of callus, while cv. Jaya/233 F₆ obtained higher rate of green plantlets through the accelerated differentiation of green plantlets.

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CSO: 4011/52

THE STUDIES ON QUANTITATIVE CHARACTER IN EAR AND DWARF CHARACTER OF THE HYBRID GENERATIONS BETWEEN WINTER AND SPRING WHEAT

Chengdu SICHUAN DAXUE XUEBAO [JOURNAL OF SICHUAN UNIVERSITY] in Chinese No 1, 1986 pp 99-107

[English abstract of article by Wang Chengjun [3769 2052 0193]]

[Text] By crossing the dwarf wheat with some high stem habit wheats, the quantitative character in ear and dwarf character of the hybrid generations were analysed and the results obtained are as the following.

1. The ear types, both in the hybrid populations of F₃ in jian 33XYa-Ai 2 and F₄ in Ya-Ai 2Xke chun 14, are longer and more compact than that of their parents, and the variation coefficients of their ear length, kernel number/spike and 1000 grain weight are greater than those of their parents.
2. The genes governing the dwarf character in wheat Ya-Ai 2 have been found to be of two types, one is monofactor-one gene pair inheritance, the other is polyfactor-two or three gene pairs inheritance.
3. The correlation coefficients between plant height with kernel number/spike and plant height with 1000 grain weight are 0.6102* * and 0.7595* * respectively.

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CSO: 4011/45

THE CHEMICAL SYNTHESIS OF A NEW CYTOTOXIC PEPTIDE

Shanghai SHENGWUHUAXUE YU SHENGWUWULI XUEBAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 1, Jan 86 pp 72-73

[English abstract of article by Du Yucang [2629 7183 5547], Shen Jinhuan [3088 6855 3562], Wang Kezhen [3076 0344 5271], Wu Wenyu [0702 2429 3768], Wu Cuirong [0702 5050 1369], and Gu Benxian [7357 7609 6343] of the Shanghai Institute of Biochemistry, Academia Sinica]

[Text] A new cytotoxic polypeptide with bacteria-inhibiting activity has been synthesized by the method of fragment condensation on solid support. The total coupling yield was over 60 percent. The amino acid sequence of this synthetic peptide is as follows: LKCNKLVPLFYKTCFAGKNLCYKMFVSNKMPVKRGCIDVCPKSSLVLKY-VCCNTDRCN. This sequence is the same as that of MT-D₁, a new cytotoxin from Chinese cobra snake venom, except for interchange of Leu and Val in positions 48 and 49.

After HF treatment, gel filtration, oxidation and further purification on Sephadex G-50 and CMC column, the synthetic toxin showed the same biological and immunological activities as native MT-D₁.

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CSO: 4011/57

Grain Development

GENETIC POTENTIAL OF QUANTITATIVE CHARACTERS AND ITS UTILIZATION IN BARLEY (H VULGARE L)* BREEDING

Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 1,
1986 pp 60-67

[English abstract of article by Mo Huidong [5459 1920 2767] and Huang Zuliu
[7806 4371 0362] of the Laboratory of Quantitative Genetics, Jiangsu Agricultural College, Yangzhou, Jiangsu Province]

[Text] From 1982-1983 and 1983-1984, 595 barley varieties, in which 300 varieties came from the Jiang-Zhe-Hu area (including Jiangsu and Zhejiang Provinces and Shanghai district) and others mainly from foreign countries, were investigated to explore the genetic potential of quantitative characters. These varieties are grouped under four types, i.e. two row naked and hulled, four and six row naked and hulled barleys. The results obtained are as follows.

1. In all barley types, the varieties are widely divergent. The genetic coefficients of variation are more than 15 on the average for the characters of heads per plant, number of grains per head and grain yield. Thus, there is a great potential for selection and some high-yield genotypes may be directly sorted out for utilization.
2. The common characteristics of varieties planted in the Jiang-Zhe-Hu area are early-heading, high-culm and more grains per head, but they are not as good as the exotic varieties in the characters of heads per plant, grain weight, harvest index and grain yield, etc. Therefore, it is preferable to combine the early-heading and adaptability in Jiang-Zhe-Hu varieties with the short-culm and high-productivity in exotic varieties by cross-breeding.
3. According to the results of path analysis, the principal character for the high-yield genotypes in all barley types is more heads per plant, followed by more grains per head and higher weight of grains. In some types, other characters are also effective, but less in importance.
4. The protein contents in grain vary with the varieties and have a range of 8.4-15.7 percent in our materials. However, no significantly partial correlation between protein content and yield has been found in most cases. It suggests it is possible to develop the excellent variety with both high yield and protein content in barley breeding practice.

*Project supported by the science fund of the Chinese Academy of Sciences.

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CSO: 4011/54

GENETIC ANALYSIS OF THE PEDIGREES OF THE IMPROVED CULTIVARS OF ORYZA SATIVA L.
SUBSP. HSIEN IN SOUTH CHINA

Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 1,
1986 pp 41-48

[English abstract of article by Gu Minghong [7357 6900 3163], Pan Xuebiao [3382
1331 1753], and Li Xin [2621 2946] of the Jiangsu Agricultural College,
Yangzhou, Jiangsu Province]

[Text] The pedigrees of 529 cultivars of *Oryza sativa* L. subsp. hsien released from 1950 to 1984 were analyzed genetically. Among the cultivars studied, 469 cultivars (denoted as group 1) were released in the period from 1950 to 1975, 20 cultivars (group 2) in 1970s and 45 cultivars (group 3) in 1980s.

The original cytoplasm of the cultivars can be traced back to 73 varieties in which Ai-zi-zhan (AZZ), Nan-te-hao (NTH), Shehg-li-xian (SLX), and Cina are main cytoplasm donors. About 40.64 percent of the cultivars traces to AZZ, while 11.72 percent to NTH, 7.56 percent to SLX and 6.16 percent to Cina in maternal origin respectively. The ratio of cultivars with Cina cytoplasm has being tended to higher and that of NTH towards lower while AZZ being relatively constant as cytoplasm is concerned.

The semidwarf gene of the cultivars are donated by 6 varieties, they are AZZ, Ai-jiao-nan-te (AJNT), DGWG, Ai-Zhong-shui-tian-gu (AZSTG), Hua-long-shui-tian-gu (HLSTG) and Zhong-shan-wu-ming-zhong (ZSWMZ). AZZ was the most important donor of semidwarf gene in last 35 years in rice breeding in South China. In the cultivars of group 1, the semidwarf gene of 172 cultivars originated from AZZ, an equivalent to 46.30 percent of the semidwarf cultivars in the group. And the gene of 45 percent of the cultivars in group 2, 40 percent of the cultivars in group 3 are also traced back to AZZ. AJNT is one of the most important donars of semidwarf gene in the cultivars of group 1 with 102 cultivars (or 26.46 percent) bearing the gene originated from it. But the ratio of cultivars with the semidwarf gene of AJNT dropped down rapidly in group 2 and group 3. On the other hand, the amount of cultivars with semidwarf gene originated from DGWG has being increased steadily in recent years.

A close attention has been paid to breeding cultivars resistant to rice blast and leaf blight. The dominant gene of Xa-4^a and Xa-4^b have been used in breeding programs.

NTH, AZZ, SLX, and DGWG are four of the most important varieties from which a number of cultivars have been delivered in *Oryza sativa* L. subsp. hsien, in South China. But a tendency of the frequency of NTH used in crosses being down and the frequency of the cultivars from IRRI being up has shown up.

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CSO: 4011/54

Plant Physiology

ANALYSIS OF OSMOTIC CHARACTERISTICS OF BIOLOGICAL MEMBRANES

Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese
No 1, 25 Feb 86 pp 6-10

[Article by Zhu Jianjun [2612 1696 6511] and Wang Hongchun [3769 3163 2504]
of Shanghai Institute of Plant Physiology, Chinese Academy of Sciences]

[Abstract] Membranes are universally distributed in living systems; the osmotic characteristics determine some functions of membranes. The article describes osmotic characteristics of ideal and nonideal semipermeable membranes, moisture relationship of plant cells, and osmosis of the cell membrane (including the outgoing osmosis factors of an internal solvent in the cells). However, the article does not discuss further the function of the electric potential for the electrolyte, and the coupling function of diffusion and volume flow, except in a figure showing the equivalent volume flow on passing through an ideal semipermeable membrane due to pressure and osmotic potentials. There are 38 equations elaborating the theoretical analysis. The article was received for publication on 20 June 1985.

10424/12951
CSO: 4011/39

RECENT PROGRESS IN STUDY OF BIOSYNTHESIS OF ETHYLENE

Shanghai ZHIWU SHENGLIXUE TONGXUN [PLANT PHYSIOLOGY COMMUNICATIONS] in Chinese
No 1, 25 Feb 86 pp 60-66

[Article by Liu Yu [0491 1946], Shanghai Institute of Plant Physiology,
Chinese Academy of Sciences]

[Abstract] Ethylene (C_2H_4) is a plant hormone. In 1979, S.F. Yang (Yang Xiangfa [2799 4382 4099]) and his student D.O. Adams discovered that ACC is the direct precursor in the biosynthesis of ethylene; they determined its synthetic pathway in a plant. This is a milestone in research on ethylene. In the next 6 years, rapid progress was made along this line, especially centering on ACC. The article presents the precursors of ethylene formation ($ACC \rightarrow$ ethylene), and synthesis of ACC and its resultant ($ACC \rightarrow$ MACC). Four figures show methionine cycle related to ethylene formation, its regulation, ethylene formation and variations of ACC and MACC following dehydration of wheat plant leaves, and a functional model of transfer enzyme $ACC \rightarrow$ MACC. Three tables show the inversion into butene from AEC isomers, EFF activity (of unripe tomato) promoted by ethylene, and ethylene promotion of the reaction $ACC \rightarrow$ MACC unripe tomato. Parts of the article were read at the hormone section meeting of the China Plant Physiology Society in 1985.

10424/12951
CSO: 4011/39

A NITRATE REDUCTASE-LESS MUTANT CELL LINE ISOLATED FROM DATURA CALLUS

Shanghai ZHIWU SHENGLI XUEBAO [ACTA PHYTOPHYSIOLOGICA SINICA] in Chinese
No 1, Feb 86 pp 1-8

[English abstract of article by Dong Niu [5516 3662], Zhang Deyi [1728 1795 7328], Ye Xufeng [0673 0650 0023], and Tang Yuwei [3282 3768 3837] of the Shanghai Institute of Plant Physiology, Academia Sinica]

[Text] With UV light mutagenesis and chlorate screening, a nitrate reductase-less mutant cell line was obtained. The nitrate reductase activity in the mutant cell line was only about 1/5 as the normal type. The test for chlorate resistance showed that the mutant cells grew well on the medium containing 60 mM KClO_3 , whereas the normal type of cells died under the same condition. The mutant cells grew better than the normal type on the medium with $(\text{NH}_4)_2\text{SO}_4$ as sole nitrogen source, however, they grew less well on the medium with nitrate as sole nitrogen source. The electrophoresis pattern of proteins from the mutant cell line was quite different from that of the normal type. These characteristics remained stable after the callus was cultured on the medium without selective pressure for 2 years. It is suggested that this cell line is a genetic variant.

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Plant Protection

BACTERIAL ROOT-ROT DISEASE OF PADDY RICE, PATHOGENESIS PROBED

Tianjin ZHIWU BAOHU [PLANT PROTECTION] in Chinese No 1, 8 Feb 86 pp 12-14

[Article by Cao Zhenqian [2580 2182 0051], Wuxi Municipal Bureau of Agriculture, Jiangsu Province]

[Abstract] In 1983, bacterial root-rot disease of paddy rice plants broke out in Wuxi in 72,800 mu of farm land. In 1984, the outbreak expanded to 105,500 mu during the high clustering period of late rice plant. In its final growth period, rice plants in an area of 27,400 mu withered while still young. The plant disease poses as a serious threat to paddy rice in Wuxi with an estimated loss of 11,093,000 jin of unhulled rice grain in 1984. This is possibly caused by bacteria infecting the damaged ochrea during the seedling transplanting period. In addition, in the intermediate rice growth season with temporary drying of paddy fields, some rice plant roots may be damaged from bacterial infection. With field investigation and tests in the 2 outbreak years, the root-rot disease is closely related to rice varieties, fertilizer, and control of water and muddiness. Application of more potassium and organic fertilizers can relieve the outbreak, which generally occurs in depressed fields with heavy, clayey soil. The most common complication is disease attacking the micrococcus nucleus. Four tables show disease infections in various growth periods and different varieties of late-rice plants, as well as effects on reduced output and increased fertilization. The author is grateful to the following individuals: Hu Jianchen [5170 1696 3819] of Wuxi County Plant Protection Station, Xu Zhiping [1776 1897 1627] of Yixing County Plant Protection Station, and Xu Genyuan [1776 2704 3293] of Mashan Office Agriculture Science Station for taking part in the investigation; and Yang Shanfa [2799 0810 4099] of Agriculture Normal School for revising the article.

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IDENTIFICATION OF BIOTYPE OF AGROBACTERIUM TUMEFACIENS OF HOP AND PRELIMINARY STUDIES ON BIOLOGICAL CONTROL

Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACICA SINICA] in Chinese No 1, Mar 86 pp 50-51

[English abstract of article by Ren Xinzhen [0117 2946 2973], Pan Xiaomei [3382 1420 3780], and Fang Zhongda [2455 0022 6671] of the Department of Plant Protection, Nanjing Agricultural University, Jin Qian [6855 3383] and An Wenchen [344 2429 2052] of the Department of Agronomy Xinjiang Shi-Ho-Zhi Agricultural College]

[Text] Sixty one isolates were isolated from gall samples of hop and from soil of infected fields in Xinjiang, Shandong and Zhejiang provinces. According to the cultural characters and stained reaction of 14-15 isolates, physiological and biochemical characters and pathogenicity of 12 isolates, these isolates were identified as *Agrobacterium tumefaciens* and belonged to Biotype I.

The pathogenic *Agrobacteria* isolates were sensitive to Agrocin 84 producing by *A. radiobacter* K-84, but varied in some extent of sensitivity. Biological control tests with K-84 in greenhouse on hop and tomato plant, indicated no gall production or the size and number of gall decreased with different proportions of K-84. The isolates of strong sensitivity in vitro gave no gall production on hop and tomato at 1:1 (antagonist: pathogen) ratio while the isolates of weak sensitivity in vitro showed no gall production at 3:1 ratio.

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THE MULTIPLE RESISTANCE OF ZHELI NO 1, A PROMISING INDICA RICE VARIETY, TO
SOME MAJOR INSECT PESTS AND DISEASE

Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACICA SINICA] in Chinese No 1,
Mar 86 pp 20-21

[English abstract of article by Wu Guorui [1566 0948 3845], Tao Lingyong
[7118 2651 0516], and Chen Fuyun [7115 4395 0061] of the Institute of Plant
Protection, Zhejiang Academy of Agricultural Sciences]

[Text] This work for breeding rice varieties resistant to insect pests and
disease was initiated in 1973, and a promising variety Zheli no. 1 moderately
resistant to the brown planthopper (BPH), *Nilaparvata lugens* (Stal) and the
whitebacked planthopper (WBPH), *Sogatella furcifera* Horvath, and resistant
to the green leafhopper (GLH), *Nephotettix cincticeps* (Uhler) and blast, has
been released. Parents of the variety are: Guang Tang Ai/Mudgo/Zhu ke no. 2.
The relationship between the population dynamics of BPH and the resistant
varieties, and the situation of BPH "biotypes" are also discussed up to
present, the preponderant field population of BPH still belongs to "biotype 1",
but the whole population is an integrated complex of heterogeneous individuals
due to the different sources of initial immigrants.

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Veterinary Medicine

PROSPECT OF HERB IMMUNOLOGICAL EFFECT EXAMINED

Beijing ZHONGGUO SHOUYI ZAZHI [CHINESE JOURNAL OF VETERINARY MEDICINE] in Chinese No 1, 22 Jan 86 pp 42-46

[Article by Zhou Jintai [0719 6855 3141], Fujian Agricultural College]

[Abstract] Immunological reactions of animals constitute a delicate, complex, and perfect immunology network system to ensure the most appropriate reaction to cope with antigen stimulation by their unique function, close coordination, and mutual restraint. The yin-yang theory in Chinese traditional medicine considers the body as an entity. In the current view, there are inseparable correlations in adjusting the physiological functions among the three: central nervous system, internal secretion system and immunity system. The clinical effect of preventing and treating diseases with Chinese medicinal herbs is generally manifested in adjustment of the yin and yang; this adjustment naturally includes adjustment of the immunity system to normalize, supplement and/or lower the anomalous, deficient, and/or excess immunity system. Owing to prolonged blending of penicillin in animal feed, a bacteria's drug resistance becomes a serious problem. This undesirable side effect may be transmitted to man. Because medicinal herbs are low in side effects, their use (in the raw form or with their preparations) in replacing a fraction of the antibiotics is quite practical. Investigation of the applicability (as immunity accelerants, depressants, and regulating agents) of medicinal herbs should have promising long-term prospects. The author is grateful to Prof Yu Chuan [0060 5307] of Beijing Agriculture University for reviewing the paper.

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TOOSENDANIN POISONING OF HOGS EXAMINED

Lanzhou ZHONGGUO SHOUYI KEJI [CHINESE JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 2, 20 Feb 86 pp 47-48

[Article by Wen Junban [3306 0193 2647], Li Baomin [2621 1405 3046], Tan Shuhua [6223 5289 5478] and Song Yanming [1345 3601 2494] of Guizhou Agricultural College; and Li Guochong [7812 0948 1504] and Zhang Duanhe [1728 4551 0735] of Zhenning County Bureau of Animal Husbandry, Guizhou Province]

[Abstract] The authors discovered recently in Zhenning County that seven hogs suffered acute poisoning with oral administration of toosendanin ($C_{30}H_{38}O_{11}$) ascaridole tablets, resulting in five dead hogs in spite of medication with antispasmodics and analgesics. Artificial duplication tests were successful: two hogs died hours after administering toosendanin tablets of 8 to 10 milligrams per kilogram of hog weight. This shows its toxicity in hogs without effective antidotes, in the current state of knowledge. As revealed through research, root peel and seed of *Melia japonica*, Don. contain toosendanin, its water-soluble constituent $C_{31}H_{40}O_{12}$, kulinone, and margosine, among other constituents. In contrast to hog poisoning with seed or root peel of *Melia japonica*, Don., the symptoms and biopsies with toosendanin poisoning are not noticeable in salivation in the poisoned animals, and the absence of white bubbles in the throat, trachea and/or bronchi. Therefore, it is possible that constituents other than toosendanin in the plant seed and root peel cause toxicity in hogs.

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MCPKP, SPECIAL MICROCOMPUTER PROGRAM FOR PHARMACEUTICAL DYNAMICS

Lanzhou ZHONGGUO SHOUYI KEJI [CHINESE JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 4, 20 Apr 86 pp 57-60

[Article by Xia Wenjiang [1115 2429 3068] and Cheng Zhangrui [2052 4545 3843] of Institute of Veterinary With Chinese Traditional Medicine, Chinese Academy of Agricultural Sciences]

[Abstract] MCPKP is a microcomputer program for automatic selection in pharmaceutical dynamics. The program is based on a similar program, AUTOAN, which is operated with mainframe computers; however, almost all features of AUTOAN are preserved in MCPKP: analysis of velocity types of a drug as it passes through an animal's body; index stripping; selection of the optimal model for pharmaceutical dynamics; processing with nonlinear least squares of parameters; and printout of coordinate diagrams determining the matching degree between the test and the theoretical calculation points. Included are the following supplementary features to the AUTOAN that the MCPKP possesses: keyboard input; a model of the third laboratory with intravenous injection; output in the form of charts with the final stage of the parameters, such as half-life period, the time to peak drug effect, and peak concentration among other parameters; and completion of all computation without suspending operation before matching with the nonlinear least squares curve as in AUTOAN. After being tested with scores of experimental data, the MCPKP proved to be good software for simple, fast operation with microcomputers.

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